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OUR VANISHING FOOD FISH

By HON. J. CHARLES LINTHICUM.

ONE of the many stories attributed to Abraham Lincoln is that of a shrewd Yankee who entered a country store, took up a dried herring, and inquired its price. Told that the fish was a nickel he hesitated and asked the cost of a mug of cider. On being informed that it was the same price, he returned the herring and drank the cider. As he was leaving, the storekeeper halted him with the reminder that he had forgotten to pay for the cider.

"Why," exclaimed the Yankee, "I exchanged the herring for it."

"Well, then, pay for the herring," demanded the storekeeper.

"But, I didn't get it," protested the Yankee, "I took the cider."

As the Yankee disappeared down the road, the puzzled storekeeper scratched his head and observed:

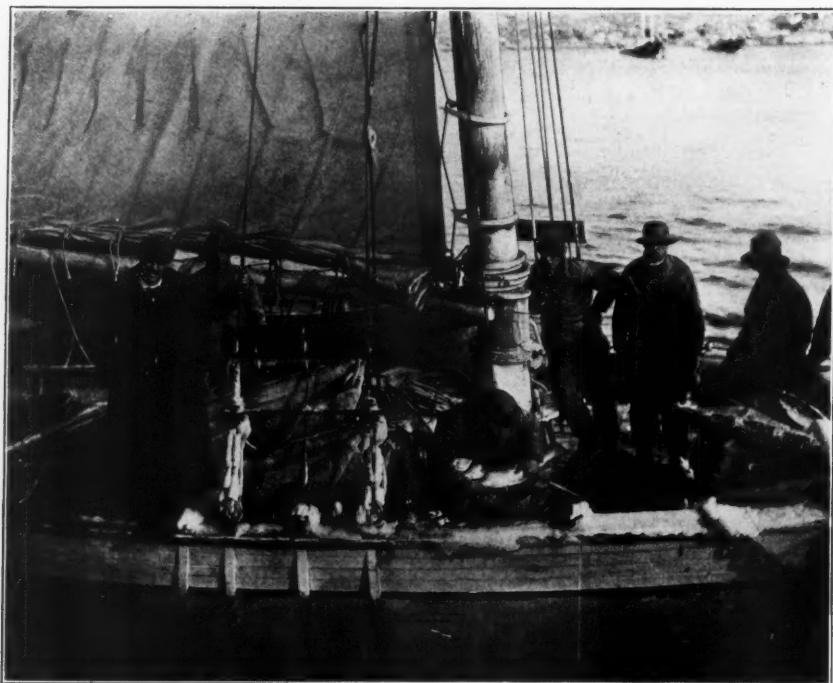
"Well, consarn it, I've been done out of a nickel somewhere!"

This story was current when Lincoln was making his campaigns for public



A FISHING SCHOONER.

AN IDEAL TYPE OF THE SWIFT SAFE VESSEL FOR FISHERMEN. IT IS THE GRAMPUS, BUILT BY THE UNITED STATES GOVERNMENT.



COLLECTING COD EGGS ON A FISHING VESSEL.

ONE SOURCE OF COD EGGS HATCHED AT THE NEW ENGLAND STATIONS IS THE CATCH OF THE MARKET FISHERMEN. SPAWNERS BOARD THE FISHING BOATS, OVERHAUL THE FISH, AND SAVE THE EGGS OF SUCH AS ARE RIPE.

recognition, for in those days a part of the stock of every country store was a barrel of cider and a supply of dried herring; hence the story is typical of conditions a half-century ago. Though cider is yet a part of the stock of every green grocery, but comparatively few of them now sell dried herring. The herring that were disposed of by millions to the small storekeepers throughout the land are no longer handled as extensively for food purposes, and that statement raises a most interesting query:

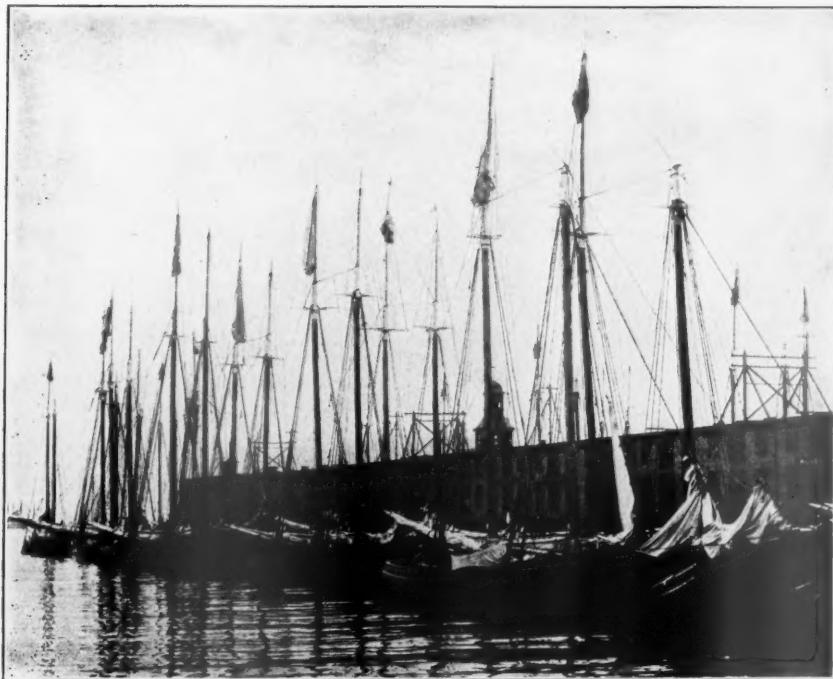
“What is becoming of the herring?”

WHERE THE HERRING GO.

If you visit the upper-waters of the Chesapeake during the Spring run of the herring you will witness scow load after scow load of that fish being sold to boats representing the fish fertilizer factories of Virginia. There is no attempt to conceal the traffic, no effort at

secrecy—the business is all conducted in the open light of day. You will see boatload after boatload, consisting principally of herring, but in which “are quantities of small white and yellow perch and other food fish” being carted off down the bay to be dumped into the capacious, ever hungry maws of the fish fertilizer factories of Virginia. This, then, explains what becomes of the herring which were at one time sold by nearly every grocery store in the land.

If you will continue your investigation you will find that throughout the Chesapeake basin boats from the fish fertilizer factories of Virginia visit the fishing fleets and purchase their herring. According to testimony given at a Congressional hearing, the fertilizer factory boats so dominate the fishermen that the latter decline to sell to others, as a result of which, in some sections the fertilizer boats enjoy a com-



THE FRESH-FISH FLEET AT T WHARF, BOSTON.

Larger quantities of fresh sea fish are landed at Boston than at any other port in the United States. The principal species are cod, cusk, haddock, hake, pollock, halibut, swordfish, and mackerel, together with lobsters, oysters, and clams. A day's receipts of fresh fish from the grounds off the New England coast have sometimes exceeded 2,000,000 pounds.

plete monopoly of the market. They purchase herring for less than others, and indeed so completely do they control the market, that the fishermen refuse to sell to individual consumers or to boats sent out by the packing houses who wish to purchase and pack for food purposes. Representatives of a fish-packing house were refused fish although they offered 50 cents more per thousand than the fertilizer boats. Their offer was declined owing to the fact that the fertilizer boats are always willing purchasers at their fixed prices, regardless of the condition of the market. The boats representing the fish packers, however, purchase only a certain quantity and desire no more. The result is, that the fisherman prefers to deal with the steady customer to whom he can at all times deliver his catch rather than with one whose purchases are limited.

More than 5,000,000 food fish caught in 1912 in the nets at the head of the Chesapeake Bay went into the machines of the fertilizer factories of Virginia. Three pound nets alone delivered 147,000 fish to the fertilizer boats in a single day.

The result of the use of herring for fertilizer has been a studious effort to increase the catch of that fish. With a market available under conditions which allow of no surplus or waste, the fisherman is able to regulate his day's earnings by the size of his catch. The profits are measured only by the quantity of apparatus the fisherman is equipped to operate and the number of fish taken.

What has been the effect? Intense fishing, the multiplication and extension of nets and traps of varied character, all for the purpose of increasing the catch regardless of the consequences.



LARGEST SEINE IN THE WORLD.

This seine, operated for shad and alewives at Stony Point, Virgin'a, on the Potomac River, was the longest net of the kind. The net proper was 9,600 feet in length, and the hauling ropes at the ends were 22,400 feet long, giving 32,000 feet as the total sweep of the seine, only one end of which shows in the illustration. The seine was hauled by steam power and the labor of 80 men, and was drawn twice daily, at ebb tide, throughout the season. As many as 3,600 shad were taken at one haul, and 126,000 in one season, and 250,000 alewives were caught at one time. Recently the season's yield of shad fell to 3,000, and the fishery was consequently discontinued in 1905 after having been carried on for a century. This seine was a source of eggs for the Bureau of Fisheries shad hatchery on this river.

The effect of this ruthless harvesting of the waters is shown in the decreased catch of herring at Ferry Landing, Virginia, where was located the largest seine on the Potomac River, twelve hundred fathoms long. It discontinued operation owing to the scarcity of fish. In former years, this celebrated fishing shore, with even a smaller seine, sometimes yielded 200,000 or more herring at a haul, and even up to ten or fifteen years ago took probably 15,000 to 30,000 at a haul. In 1913, the largest haul was 3,000 herring.

Virginia has laws forbidding the taking of herring in its waters for fertilizer purposes. Boats of the fertilizer companies of the Old Dominion, therefore, sail into Maryland waters, purchase herring and carry them to the factories in Virginia. Maryland has but

one small fish fertilizer factory and no laws against the taking of herring for use for fertilizer.

That many fishermen realize the moral wrong involved in thus diverting the herring from channels of the highest utility is evidenced by their statements. A representative of the Maryland State Game and Fish Protective Association says:

"Fishermen who have sold these fish for fertilizer have come to me and told me they believed it wrong and wished it could be stopped by law in this State, knowing that they were injuring themselves by thinking only of the present, with no thought of the future, but while it was lawful and others did it they would continue to do it also."

In justice to the fishermen it should

be stated that they point to the steady decline in the demand for herring for food and contend that more herring are not being sold for fertilizer than were heretofore sold for food, and ask what effect upon the supply of that fish has the use of the herring for one purpose than another? I do not positively affirm that the ease with which the fisherman may dispose of their catch to the fertilizer factories has contributed to the decline in the use of that fish for food purposes, but the situation certainly begets that suspicion. Conceding, how-

ever, that the herring is a good food fish, it is evident that the use of the herring for fertilizer purposes is a serious factor in the decline of the herring supply.

The meat of the herring is delicious and it would be one of our most popular food fish were it not for its exceedingly numerous bones. The fish-eating world awaits the coming of the genius who shall do for the herring what Eli Whitney did for the cotton boll. That Dame Necessity, who is the Mother of Invention, will produce this individual in good time, is not to be



FISHING FOR LOBSTERS.

FERRIED LOBSTERS, TAKEN FROM POUND AT BOOTHBAY HARBOR STATION (MAINE), IN COURSE OF TRANSFER TO WELLS OF THE STEAMER WHICH IS TO CONVEY THEM TO THE BUREAU OF FISHERIES HATCHERY FOR STRIPPING.

ever, that the herring is an inferior food fish, is it economically wise to permit its unrestricted destruction for non-food purposes? Will not, within a comparatively short period, the increasing exigencies of our meat-food problem force this inferior fish into a place of importance in the diet of many of our people?

The use of herring for fertilizer is not confined to the waters of the Chesapeake. Along the New England

doubted, and even now there ought to be aspirants in the field for that honor.

The present year's catch of herring in the Chesapeake Basin is the smallest in the history of those fisheries. Nearly all the commercial fisheries failed to earn a profit and hundreds of the fishermen have been plunged into excessive debt. Indications point to next season being worse than the present, and the future prospects are discouraging.

THE DISAPPEARING SHAD

While I believe it will be generally agreed that it is economically unwise to permit fish as good as herring to be ground into fertilizer, it is not more wrong than those practices by which our waters are being robbed of that splendid delicious food fish, the shad. The Chesapeake basin affords such a striking example of the impending fate of this valuable fish when frequenting waters flowing through two or more States, that I shall confine my observations to those waters.

Before pointing out the pound-foolish policy of the fisherman toward this excellent market fish, let me explain that not many years ago so populous were the waters of the Chesapeake with the shad that large portions of this

toothsome fish were to be had in season, at even the cheapest eating houses in Baltimore. Families purchased the male and female shad at prices ranging from twenty to forty cents apiece. So excessively has its price increased that many of the cheaper eating houses do not now sell shad, while families purchasing the fish are compelled to pay from forty cents to one dollar and twenty-five cents per fish.

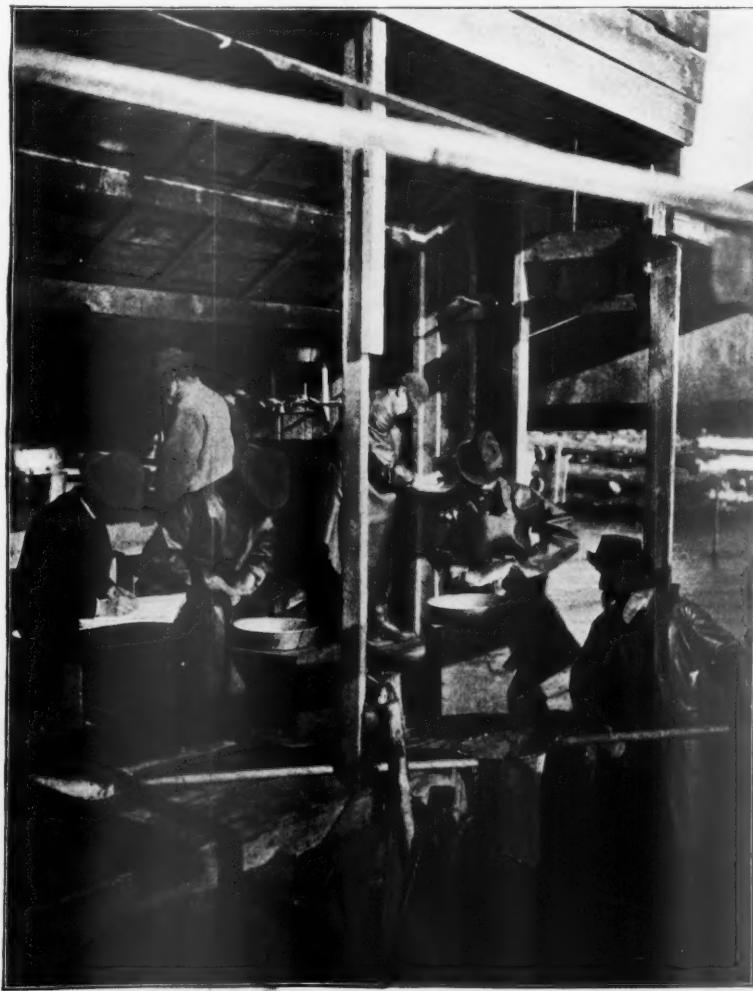
What is the explanation?

If you enter the waters of the Chesapeake from the Atlantic Ocean and proceed up the Bay, you will find running out from the Virginia shores for mile after mile, a vast maze of nets, some extending as far as eight or ten miles toward the center of the Bay. These nets completely honeycomb the favorite path of the shad as they come



A QUICK CATCH.

THIS EXPERIMENTAL CATCH OF COD AND HALIBUT WAS TAKEN IN TWENTY MINUTES ON A NEW "BANK" OFF THE COAST OF ALASKA.



CONSERVATION OF SALMON.

THE SPAWN OF THE LANDLOCKED SALMON IS TAKEN FROM THE FISH AT GRAND LAKE STREAM, MAINE, FOR THE HATCHERIES.

in from the ocean and attempt to proceed up the Bay to spawn. In addition to this maze of line nets, there are thousands of gill and pound nets at frequent intervals in the path of the shad, conveniently placed for his capture and destruction. A few years ago the State of Virginia was licensing only fifteen hundred of these pound nets; two years ago they had increased to about twenty-five hundred; and last year Virginia was licensing four thousand of them.

These nets work twenty-four hours every day in the week, and are the most relentless agency of destruction it has so far been within the ingenuity of man to invent.

It is obvious that if the shad cannot reach the spawning grounds they do not reproduce, hence, must continue to diminish.

The effect of this unrestricted netting is eloquently attested by the decreases in the catches of the fishermen.

For instance, Neitzey Brothers, whose seine at Ferry Landing was referred to heretofore, report that in 1909 they caught 9,000 shad, that in 1912 it was 900, and in 1913 it was 700. Ferry Landing, where this seine was operated, is on the Potomac River but a few miles from Mt. Vernon.

The enormous decline in the total catch of shad in Virginia and Maryland is shown by the following tables:

*Virginia.**—1897, 11,529,474 pounds; 1909, 1,421,864 pounds; 1913, 2,752,321 pounds.

*Maryland.**—1890, 7,127,486 pounds; 1900, 3,111,181 pounds; 1912, 1,912,240 pounds.

In vain has the United States Bureau of Fisheries sounded repeated warnings of the rapidly disappearing shad. In the annual report of the Secretary of Commerce for 1913 appears the following significant statement:

"The immediate cause of the failure of the shad and herring fisheries in 1913 is the diminished run of spawning fish into Chesapeake Bay from the sea and the enormous quantity of apparatus among which a limited catch had to be divided. Inasmuch as the great bulk of the yield is taken in salt water, the remnant that was able to reach the spawning grounds in the streams was insignificant and wholly inadequate to maintain the supply.

"The remote cause of the present condition is excessive fishing in former years and the lack of even the minimum amount of protection that is demanded by regard for the most elementary principles of fishery conservation. Fish entering Chesapeake Bay have to run through such a maze of nets that the wonder is that any are able to reach their spawning grounds and deposit their eggs. The mouth of every important shad and herring stream in the Chesapeake Basin is literally clogged with nets that are set for the special purpose of intercepting every fish, whereas a proper regard for the future welfare of the fisheries and for the needs of the migrating schools would cause the nets to be set so as to insure the escape of a certain proportion of the spawning fish.

"Adequate protection of the fishes is compatible with great freedom of fishery and with a large and increasing yield. A very slight curtailment of the catch, perhaps as little as 10 per cent in any given year, may be sufficient to perpetuate the species and result in increased production in a few years. To disregard a requirement so small and to permit the continuance of an evil so serious simply invites and encourages the destruction of a most valuable food supply."



A FEMALE SALMON.

The present has been a disastrous season to the shad fishery. Hardly a commercial fisherman reports sufficient catch to show a profit, and as a result never as before attention has been directed to the necessity for laws and regulations that will prevent the complete destruction of the shad. The constantly ebbing supply of this fish is reflected in the take of shad eggs at the two principal propagating stations of the Bureau of Fisheries, one located on the Potomac

* From United States Government Report.

and the other on the Susquehanna River.

The figures of these stations for the past three seasons are as follows:

Potomac Fishery,*—1912, 88,727,000; 1913, 30,913,000; 1914, 29,808,000.

Susquehanna Fishery,†—1912, 12,175,000; 1913, 6,861,000; 1914, 2,367,000.

OTHER EVIDENCE.

The same record of unreasoning destruction is reported from nearly every coast State.

The New England States lament the disappearance of their salmon, once taken in abundance on the south side of Cape Cod. In the Connecticut and Merrimac rivers that fish is practically destroyed.

The striped bass has almost entirely disappeared from the rivers of New England, although they were taken in great numbers by the early colonists in that country.

The smelt has become commercially extinct.

Only a few of the shad remain, although that fish was once in such abundance that the Puritans spread them upon their land as fertilizer.

Approximately, the same record is duplicated in the southern coast States.

From the Gulf coast comes a repetition of the same story, the unbridled destruction by man having almost depopulated the waters of their most valuable food fish.

On the Pacific coast we hear the echo of like complaint.

About ten years ago the leaping tuna or horse mackerel, which is one of the most important fishes in Europe in the Mediterranean Sea, was so common during the summer months off Santa Catalina Island, California, that they would be taken by the ton, not only in nets, but on hand lines. The favorite spawning grounds of these fish, as well as those of many other valuable game fishes, was in the kelp in the smooth waters which surround the Santa Catalina and San Clements Islands. As a result of unrestricted netting, they became less year after year, until they were almost destroyed.

The fisheries along the Santa Catalina Islands decreased more than 75 per cent in twenty years, and conditions for a time were seriously menacing to the fish food supply of southern California.



MALE SALMON.

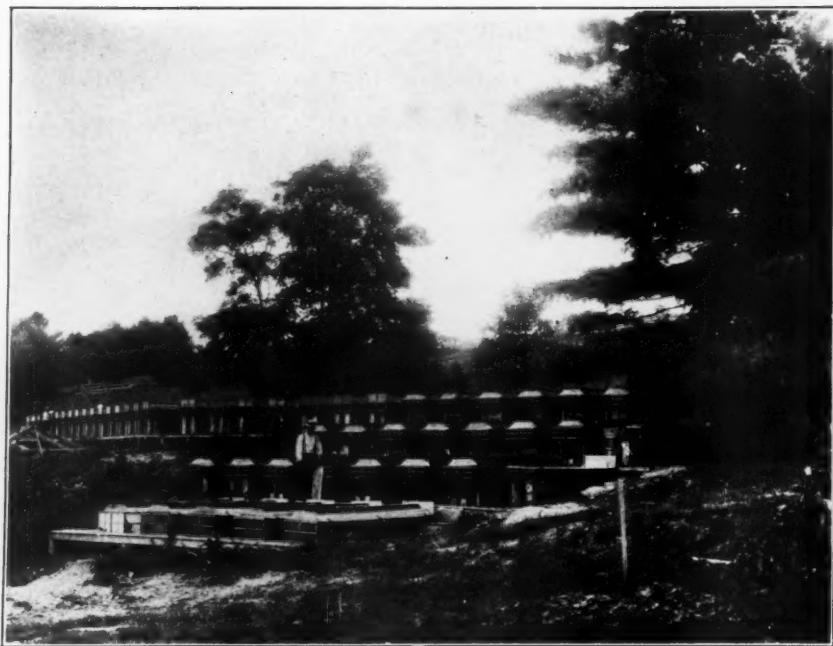
The State of Ohio had from early times permitted net fishing without regulations. A result of the lack of regulations was the placing of nets in Lake Erie for almost interminable distances. One line of nets at Sandusky extended a distance of ten miles from the shore. As a consequence of this indiscriminate net fishing the whitefish, the most valuable fish in Lake Erie, decreased over 80 per cent between 1885 and 1903.

EXTERMINATION OF THE STURGEONS.

No more striking illustration of the profligacy of American fishermen can be found than that of the history of the sturgeons. For many years these large,

*The Potomac Fishery is at Bryan Point, Maryland.

†The Susquehanna Fishery is at Battery Island, below Havre de Grace, Maryland.



OPEN-AIR SALMON-REARING TROUGH.

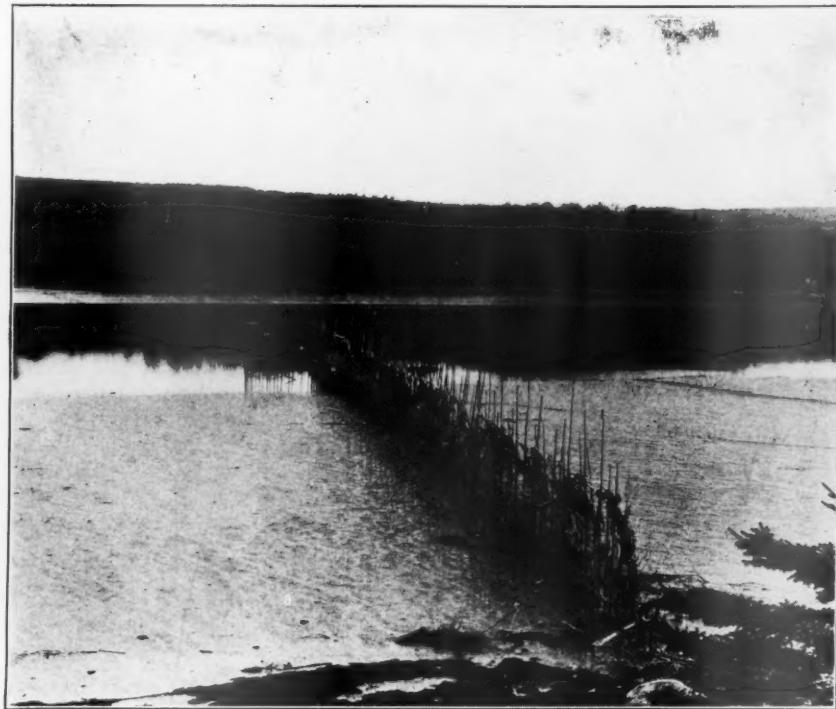
THESE TROUGH ARE USED AT THE CRAIG BROOK (MAINE) HATCHERY FOR REARING ATLANTIC AND LANDLOCKED SALMON.

inoffensive fishes of our seabords, coast rivers, and interior waters, were considered not only valueless, but nuisances, and whenever they became entangled in the fishermen's nets were mortally injured and thrown back into the water. According to the statements of Dr. Hugh M. Smith, United States Commissioner of Fish and Fisheries, the shore of the Potomac River in the vicinity of Mt. Vernon was often strewn with their decomposing carcasses, and the same object lesson was witnessed generally everywhere in the country. Finally the fishermen awakened to the fact that the eggs of the sturgeons had value as caviar and that their flesh had value as food. According to Dr. Smith's story, then followed the most reckless, senseless fishing imaginable, and in a comparatively few years the best and most productive waters were depleted, and what should have been made a permanent fishery of great profit was destroyed. Even after the great value of the sturgeons was

appreciated, no adequate steps were taken by the responsible authorities or insisted on by the fishermen, and the fish-eating public remained callous.

For a long time after the failure in the fishery was apparent the immature and unmarketable fish caught in seines, gill nets, and pound nets received no protection whatever in most waters, and were ruthlessly destroyed as nuisances, the decline thus being doubly accelerated.

On the Atlantic Coast the catch of the sturgeon fell from 7,000,000 pounds to less than 1,000,000 pounds in fifteen years; on the Pacific the same meteoric history was enacted, a catch of over 3,000,000 pounds annually in the early nineties being followed by a few hundred thousand pounds in later years of the same decade, with no improvement since that time; while on the Great Lakes the yield declined more than 90 per cent in eighteen years. In the American waters of the Lake of the Woods, one of the most recent grounds



A PENOBSCOT RIVER SALMON WEIR.

Large numbers of these traps are set in the Penobscot during the short season, and they intercept practically the entire run of salmon. The fish thus caught are the sole source of eggs for the hatchery on Craig Brook, a small tributary of the Penobscot.

for the exploitation of the sturgeon, the catch decreased over 96 per cent in ten years, notwithstanding a more active prosecution of the fishing.

FAILURE OF STATE REGULATIONS

The inability of the several States to agree between themselves upon legislation protecting the fish in interstate waters is so well known as to be historic. For public men seeking office through the suffrage of a fishing constituency to lend support to reforms involving the curtailment of any substantial right of the fishermen, has been ever tantamount to their effacement from politics. This unrelenting opposition of the fishermen has caused State Legislatures to ignore the problem entirely or apply only half-way remedies productive of little good.

Should a legislature pass restrictive measures, at the succeeding election it is certain to be vigorously assailed for having "surrendered" the "inalienable rights" of its citizens, or with having confiscated, bartered, or disposed of privileges immemorially enjoyed. It is this deplorable condition, accompanied with petty jealousies, that have rendered it practically impossible for States with jurisdictions covering different sections of the same bodies of water to mutually agree upon constructive legislation. The experience of Maryland and Virginia in the Chesapeake is a notable illustration. This same ignoble and disastrous history has been duplicated with more or less serious results in other States along the Atlantic seaboard, the Gulf of Mexico, and those bordering the Pacific Ocean. As a result, no other great in-



SPAUNTAKING OPERATIONS, BAIRD, CAL.

The fish (chinook salmon) are dipped from the pen, killed by a blow on the head, and passed to the spawntakers. The eggs are taken by opening the abdomen, and the stream of eggs may be seen in the picture following the hand making the incision.

dstry of the nation has suffered more from such baneful effects. It is the irony of fate that this important business, with its tremendous wealth, of steadily increasing economic value to our people, should be doomed to destruction through the fatal indulgence of "its friends."

Those States nearer the seaboard invariably get the lion's share of our marine fishes. For this reason we find the people of New Hampshire complaining against those of Massachusetts; those of Massachusetts inveighing against Connecticut; those of New York muttering against New Jersey; Pennsylvania protesting against Maryland; and Maryland declaiming against Virginia. And the illustration could be extended.

Too often it happens that where reason and common sense have prevailed over opposition to remedial legislation, some invisible influence has intervened

to paralyze the efforts of the officials charged with the enforcement of the laws. Again, when effort has been honestly made to carry out the laws, too frequently their administration has been entrusted by some States to a Fish and Game Department under the control of officials experienced only in protecting inland fish and game—a sportsmen's proposition—but possessing relatively as much knowledge of "marine fisheries" as do the natives of Patagonia of the nebular theory.

It is plain that adequate legislation can never come from legislative bodies thus deterred from fearlessly enacting into law their honest convictions. Obviously, what is required for intelligent solution of the situation is the strong, guiding hand of the Federal Government—for legislation springing from sources freed from all personal influences, personal friendships and exterior considerations.

Other countries have been forced, by like conditions, to meet the same issue. Cannot we profit by their experience of centuries? England, France, Holland, Germany, Norway, Denmark and Sweden, in each of which countries every small principality, every county and shire, having its ancient special fisheries rights, grants and charters, were forced to reach a mutual understanding in order to save the fisheries of the North Sea and the Channel from absolute destruction. In the Mediterranean, like conditions forced joint action and control.

RIVER POLLUTION.

Another cause of the diminution of our marine fisheries is the practice prevalent in this country of permitting our cities to dump their sewage and seepage into the waters of our bays and rivers. Not alone do we expose the health and lives of millions of our citizens to the ravages of disease and contagion through scattering broadcast the germs which such refuse often contains, but in numerous instances this refuse has contaminated the waters to such an extent as to deprive them of their normal proportion of oxygen, rendering it impossible for the fish to ascend them to their spawning beds, except under conditions rarely present.

A few of our cities already have partly established sewage disposal plants, and others now have them under construction. Our Federal Government should be foremost in setting a commendable example in this respect. Even at this late day, the boasted capital of our nation possesses no sewage plant but floods its sewage into the Potomac, whence it is carried down stream to the infection, distress, and injury, of the marine life inhabiting those waters. Plans for a sewage disposal plant for Washington are now under consideration and more active steps in that direction will be taken in the near future. At Annapolis, the United States Naval Academy dumps its sewage into the Severn. It is to be hoped that the Naval Academy will be provided with a

sewage disposal plant of its own at an early day, and that some means may be found by which every city in our country that now casts its waste upon flowing streams may be influenced as speedily as possible to adopt those hygienic methods of disposition evolved by modern engineering science and skill.



WHERE KING SALMON HIT THE TROLL.

In the New England States many streams flowing adjacent to villages, towns, and cities engaged in manufacturing, become the depositories of the seepage of the manufacturing plants. The aggregate result of this inflow is the contamination of the stream, denuding it of its life-giving properties and rendering it uninhabitable by the fish. So filthy have some of these streams become as a result of this practice that their waters are unfit to bathe in.*

The practice of dumping the sewage of our cities into our bays and rivers has not alone resulted in loss through the damage done the marine life inhabiting the waters thus defiled, but at the same time we have wasted a tremendous

* Testimony of Hon. Wm. S. Greene, of Massachusetts, before House Committee on Merchant Marine and Fisheries.

quantity of nitrogenous material that should go back on the land. In the older countries—Germany, for instance—this problem has been handled much more intelligently. In Germany they turn the sewage back on the land and lease the land, charging about thirty dollars an acre to the farmers for it. Should we adopt some similar method, we would be checking a loss on the one hand and at the same time converting waste material into a profit. The loudest demands of our agricultural population is for good fertilizer procurable at a reasonable price, and yet we have been sacrificing the very best fertilizer through the stupidity which has characterized our handling of this one phase of a most important municipal problem.

THE ECONOMIC EFFECT

What is the economic effect of our shortsighted, wasteful and extravagant policy?

Market fish are decreasing in quantity and quality in an inverse ratio to the increase of our population, and their prices steadily increasing. The fish industry in the majority of the coast States is being forced to headlong destruction.* In but a few years, if present conditions continue, the price of many of our market fish will be beyond the reach of that class of people on

whose table they are now most frequently seen.

The accompanying schedule shows the increase or decline in the catch, the increase or decline in the wholesale price, and the approximate increase or decline in the retail price covering the period between 1880 and 1908, of our most popular market fish:

Some idea may be gained of the aggregate cost to the American people of our improvident policy toward this valuable national asset when one pauses to reflect that the total Catholic population of the United States is in the neighborhood of twenty million, and that the practice of the great majority of these people in confining their meat diet on Friday to fish has caused marine food to become the favorite dish on that day of a large Protestant population. What this increase in the price of fish means to these millions of consumers is merely a matter of mathematical calculation. If this cost is estimated, the figures in dollars and cents will prove such as will be apt to startle even the most lethargic.

And let us not overlook that the penalty we are now paying is but insignificant in comparison with that which will confront us in the future unless some radical change is inaugurated.

	Catch	Wholesale Price	Retail Price
Bluefish.....	— 56%	+ 35%	+ 40 to 65%
Cod.....	— 8%	+ 5%	+ 60 to 100%
Flounders.....	+360%	— 15%	+ 10 to 25%
Haddock.....	+ 32%	+ 52%	+ 55 to 65%
Halibut (Atlantic Ocean).....	— 65%	+ 25%	
" (Pacific Ocean).....	+230%	+ 50%	+ 25 to 45%
Mackerel.....	— 25%	+ 10%	+ 100 to 150%
Menhaden.....	— 30%	+ 20%	+ 30 to 45%
Pollak.....	+380%	+ 30%	+ 35 to 50%
Salmon (New England).....	— 900%	+900%	+300 to 500%
" (Pacific Ocean).....	+ 85%	— 15%	+ 20 to 30%
Shad.....	— 80%	+120%	+175 to 300%
Sturgeon (Atlantic Ocean—1891 to 1908).....	—660%	+360%	+500 to 600%
Weakfish.....	+280%	+ 5%	+ 50 to 100%

+ Indicates increase.

— Indicates decrease.

* While writing this article I am in receipt of a letter from Mr. Joseph Crawford, of the *Newark Star*, Newark, N. J., who says:

"Thousands of tons of fish have been destroyed along our coast this summer because they were too small for market and great quantities of ling and whiting have been destroyed to keep them out of the market. The fish that hold best in cold storage, that is, blue fish and weakfish, are so scarce the net men are even becoming worried."



ALASKAN FISH TRAPS AND RUNS USED BY NATIVES ON CHILKOOT STREAM FOR OBTAINING THEIR WINTER SUPPLY OF SALMON.



SALMON TRAP IN AN ALASKAN RIVER.

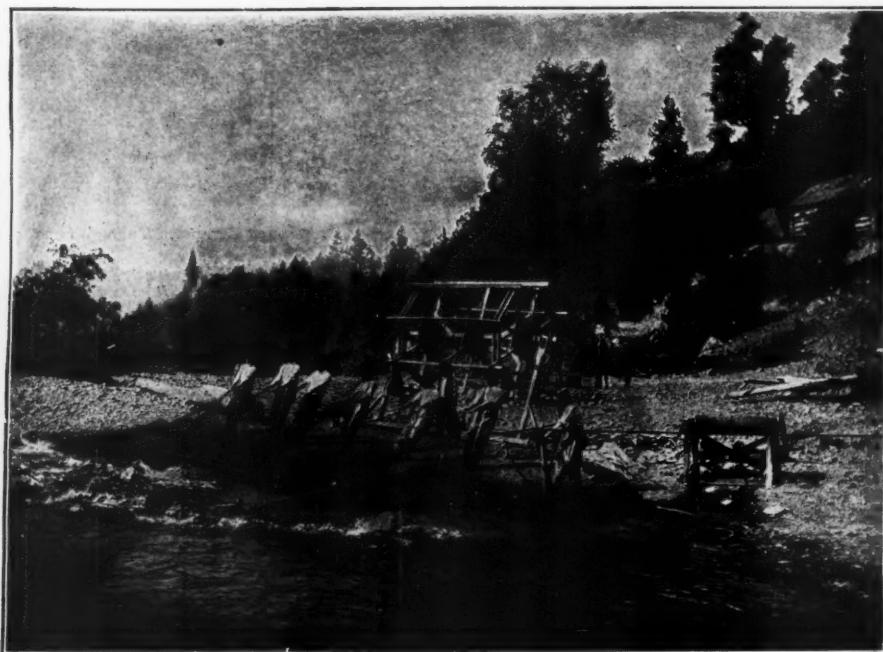
This form of trap is extensively used in the Bristol Bay region, and takes immense quantities of salmon for the canneries. The largest traps have leaders more than half a mile long, and cost upward of \$15,000.

NATIONAL PROTECTION

We have been witnesses to the necessity for national legislation protecting our forests, our coal fields, our waterfalls, and our migratory birds. These valuable assets of the nation were being rapidly acquired by a fortunate few who were turning them to their own personal profit at the expense of those who had lagged in their protection. It has ever been true that what is every man's property belongs to him who gets it. And when those acquisitively inclined are struggling for their own personal advantage, we have found

and are not the property of any one State. Nor should the people of any one commonwealth enjoy the unrestricted privilege to destroy them. Much less should a few people on our seaboard, near the mouth of those bodies of water which these fish enter, who by reason of their location are in places convenient to wage a warfare of destruction, have the right to selfishly and inequitably preempt this wealth of the sea to the deprivation and loss of those situated inland on these same bodies of water.

But this is identically what the fish-



CATCHING SALMON BY THE THOUSAND.
SEINING SPAWNING SALMON ON THE MCLOUD RIVER, CALIFORNIA, AT THE BAIRD STATION. STEAM POWER HAS
NOW REPLACED THE HAND WINDLASS.

that the rights of the majority are usually overlooked.

Our marine fishes such as the herring, the shad, the tuna, the sturgeon, the salmon, etc., are migratory fishes. They enter our bays, rivers and interior waters for the purpose of spawning, and after having performed that important function, return to the ocean. They do not remain permanently in one State

ing population of many of our coast States is doing!

We have ever crowned the heights of infamy with the figure of him who filches from the poor. Our food fish are the food par excellence of the poor. What expression then shall we use to characterize the laxity which is resulting in the dissipation of this immensely valuable food resource?

The experience we have had in obtaining that fish-protection legislation we have been fortunate enough to secure from the legislatures of the several coast States, plainly indicates that long before these States have agreed upon uniform laws, the fish will be no more. The situation is one which, in the opinion of many, is critical, and imperatively requires the attention of our National Government. To delay longer in treating it as a national problem, and to fail to apply a remedy from a national viewpoint, presages the sacrifice of what is left of our fisheries.

Acting from this viewpoint, during the first session of the 63d Congress, I

eries, whose Bureau is a portion of the Department of Commerce, regulations governing netting, seining, and the seasons for taking, framed to suit the particular requirements of each body of water, can be formulated. The judicious application of conservative methods will cause the fish to multiply, and restore to a flourishing condition the fishery business, whose present chaotic condition, due to lack of sane regulation, is forcing it to inevitable destruction, to the injury of the whole fish-consuming public.

Then, too, let us not overlook that we of the present generation are the trustees of the wealth of the waters which



KING SALMON GOING UPSTREAM TO SPAWNING GROUNDS.

introduced in the House of Representatives two measures:

The first, H. R. 7774, is designed to restrict the shipment in interstate commerce of fertilizer or oil composed in whole or in part of food fish.

The second, H. R. 7775, places all fish that do not remain the entire year within the waters of any State or territory under the protection of the Government of the United States and authorizes the Department of Commerce to define the seasons and regulate the manner and conditions under which they may be taken or destroyed.

If these measures are enacted into law the use of food fish in the manufacture of oil or fertilizer will be effectually discouraged. Under the direction of the Commissioner of Fish and Fish-

Nature has so bountifully given. It is our privilege to use what we require for our own sustenance and comfort, but when we dissipate this gift through profligacy and extravagance we rob those yet unborn of their birthright. Our holding may be likened to that of the *cestui que trust*. If our use becomes an abuse, resulting in the wasting of this estate, our wrongdoing will serve only to cast upon our memory that reproach which we deserve. In our present treatment of our food fish we are not only squandering a valuable national asset, the part destruction of which has already entailed financial loss upon ourselves, but we are destroying a food supply the effects of which upon the living problem of the future it is impossible to estimate.

Photos by courtesy of the United States Commissioner of Fish and Fisheries.



Photo by H. R. Francis.

WEST 130TH STREET LOOKING FROM FIFTH AVENUE.

There are many trees in poor condition among this planting, but the improvement brought about by the presence of the trees is something that should be duplicated on streets wherever it is possible to plant and maintain trees.

NEW YORK CITY'S TREES

THEES planted on city streets are surrounded by unnatural conditions and the struggle for existence is therefore intense, while in most cities it is made worse by improper care, lack of systematic and skillful management and by too small an appropriation for the department which should have control of the tree work. New York City, like many other cities, is in need of a bureau of tree culture, and as a result of a recent cooperative study of tree and street conditions there by the Tree Planting Association of New York City and the New York State College of Forestry, at Syracuse, which assigned Prof. H. R. Francis to the work, a plan has been suggested which may be adopted by New York, and which will furnish to other cities an idea of how such a bureau should be established and conducted and what it will mean to a city.

Up to the year 1902 in New York City, when for the first time the trees were placed under the exclusive con-

trol of the Park Department, trees were planted by private property owners, real estate promoters, civic improvement associations, etc., without consideration of the future beauty of the city as a unit. This is invariably the case where public improvement of any kind is made in a haphazard manner without the intelligence and foresight of expert supervision. Consequently, there were many causes for tree planting, all varying in motive and therefore in attainment. The result is that the city has thousands of trees that were planted without regard to uniformity and were not adapted to local conditions. Many of them also were of short-lived varieties, bringing about conditions that were altogether unsatisfactory and unnecessarily expensive to maintain. Furthermore, these unsystematic and irregular efforts have resulted in the complete denudation of large areas since trees have been removed continually and none planted in replacement.

About all the city can boast of now is the possession of thousands of trees unsightly in appearance, some of which are dangerous to the public on account of their weakened condition and are an expensive instead of a valuable asset. Had there been established a bureau to control tree planting and preservation, the work would have been done systematically, scientifically, and, above all, economically. The city today would possess an asset the value of which it is impossible to estimate, as it is an ever-increasing one.

The beauty and sanitary value of the trees rightly planted would have been universally noticeable, and the present expensive care of the trees would have been eliminated. The fact that the trees planted on the streets since 1902 present no better features than the conditions of those planted before shows that a continuation of present methods is but a guarantee to the city of the same burden of expense in the future. The economy of a bureau for the control of tree culture is therefore one of the greatest reasons for its existence.

BUREAU OF TREE CULTURE

A bureau of tree culture should be established under the Department of Parks and should, in the case of New York City, consist of a forester for each borough, so says the recent report to the Park Commission. The supervision and direction of all features connected with tree and plant culture of each borough should be under the control of the forester for that borough, who should work under the direction and approval of the Park Commissioner. The work of each forester should generally be independent of the work of the other foresters. The yearly salary of the foresters should be \$1,800 minimum and \$4,000 maximum. The position should be filled by civil service examinations of the applicants. Each forester should be a man of scientific training along lines of tree culture, including Forestry, Horticulture, Dendrology, Plant Pathology, Entomology and Landscape Gardening. He should have had at least three years of practical experience in city forestry.

DUTIES OF A FORESTER

A forester should begin the collection of data for a tree census of his borough. This would be a complete inventory of the state of work regarding the trees and the opportunities for future work. As soon as any work is



Photo by H. R. Francis.

A WOUND IN THE TRUNK OF AN ELM TREE.
Probably 90 per cent of the fine old Elms along Seventh Avenue on Manhattan have wounds similar to the one here illustrated. This condition could have been prevented by protecting the trees at the opportune time. It is far more economical to prevent such wounds which invite disease and decay than to resort to methods of tree repair which in most cases proves wholly unsatisfactory.

done upon trees or plants it should be noted on the census. In other words, the tree census would be a condensed statement of all the information regarding the trees.

He should specify the material for a municipal nursery. This is very important since the training and experience of the forester would enable him to specify the varieties of trees that would be best adapted for the work which he has in mind. The selection of trees adapted to city conditions is a very important question since the expense of future care depends to a great extent on this.

The forester should also outline general culture methods for trees already established, methods which would tend toward a permanent development in a systematic manner at a minimum expense. On account of his direct contact with the details of his work, he would know the physical condition of the trees and would, therefore, be the one to pass judgment on all trees as to their health, safety and variety. He should be in touch with the workings of the engineering department of his borough in so far as the matter of future streets is concerned; he should consult with this department so that provisions will be made at the outset for the planting and future development of trees. This is a very important feature and one that would tend not only to lower expense of future care and maintenance of trees but would also bring about the greatest opportunity for planting trees in a systematic way. It would also mean the requirements of trees which, given the proper consideration, would be much more economical and satisfactory than the adapting of trees to severe existing conditions.

The forester should select equipment and materials for his department. On account of his experience he would know the equipment of tools with which his men could work to the best advantage and which would be the most economical for the city. The matter of materials is important.

The forester should act in an advisory capacity in regard to damages to

trees. Some trees are cared for by private organizations or associations, and the forester should have supervision of such work.



Photo by H. R. Francis.

BUTCHERED TREES.

Throughout all the boroughs of New York City there are many trees that have been butchered. Trees that have been pruned in this character are so unsightly as to disfigure rather than beautify the street on which they are planted. While this method of treatment may have been applied in anticipation of saving the trees they should not have been neglected so long as to make this severe action necessary.

When trees are planted by contract the forester should act in a professional capacity. That is, he should handle the specifications and keep in close touch with the details of the work being done by contract. In brief, the duties of a forester should be advisory as well as having general supervision over the city's vegetation.

The Superintendent of Parks should hire the workmen that do the actual

work in the Forestry Department. By keeping in close touch with the Superintendent of Parks the Forester could lay out his work in advance and ar-

course, would work in harmony with the Superintendent of Parks.

The Forester should see that the proper soil for the trees specified by



Photo by H. R. Francis.

BASE OF AMERICAN ELM TREE BADLY DAMAGED BY TRAFFIC.

The root system of this tree requires a considerable area immediately around the base of the tree to send out undisturbed its spreading roots near the surface of the soil. This protection may be furnished by surrounding the base of the tree with an iron grating.

range with the Superintendent for the required number of men. This is rather important since the political phases that enter into all city work would be removed from the Forester. He, of



Photo by H. R. Francis.

A GOOD STAND OF FINE OLD ELMS LOOKING UP SEVENTH AVE., FROM NEAR WEST 117TH STREET, NEW YORK CITY.

It is impossible to estimate the beneficial effect created by the presence of these trees in a part of the city where the amount of vegetation is extremely small. This is in addition to the slightly appearance of the street. Many of the trees are surrounded at the present time with pavements leaving a small opening only directly around the base of the tree. It would be much more advantageous to the growth of the trees to have an open grass space for every tree similar to the space enclosed by the iron railing shown in the foreground of the photograph.

the Landscape Architect is furnished and that all conditions are made most satisfactory for the development of the trees and plant specified by the Landscape Architect for the formation of his composition. The Forester should also be able to prepare planting plan details to supplement the Landscape Architect's plan.

The office force should be as limited as possible so that the money appropri-



Photo by H. R. Francis.

A CEMENTED CAVITY IN AN ELM TREE.
A considerable amount of tree repair work similar to this shown in the photograph has been done on the trees along Seventh Avenue on Manhattan. A careful examination of the work shows that it has not been properly done and a large amount of money has been expended without bringing about the desired results.

ated shall go into actual care and maintenance of trees and not to the creation of office positions. In the field there should be working under the Forester's direction a sufficient number of arboriculturists to handle the different branches of the work of this department. For instance, in Brooklyn, there is at the present time an arboriculturist for the parks and two for the streets of the city. These three arboriculturists in this case should be under the direction of the Forester, who could coordinate and direct their work to bring about the maximum results of their efforts. The arboriculturist should be a man filling his position through civil service examination, and while his knowledge and experience are not necessarily as broad as that of the Forester, it should, however, be along similar lines so that the arboriculturist may work in harmony with the Forester and intelligently execute the details of his position. Under the arboriculturist would be the foreman and the workmen. It is a general custom to differentiate the work of the laborers. For instance, those who do pruning which requires a considerable amount of climbing and those who carry on spraying which requires some knowledge of spray materials and mixing.

The Forester should be able to give effectively instructional lectures regarding the work. One very important feature in connection with tree work in our cities is the education of the people not only as to the beauty but as to benefits from planting of trees in a city.

The functions of the Bureau of Tree Culture in the Park Commission would be to serve as a connecting link between the Foresters of each borough, who should come together for periodical meetings where broad questions that affect the general welfare of the trees of the city as a whole should be discussed. Features connected with the work of each man's borough could be discussed profitably, and the experience of all the Foresters could be brought to bear on the problems that come up in



Photo by H. R. Francis.

ORIENTAL SYCAMORES ON VANDERBILT AVE., STATEN ISLAND.

These trees have been planted about twenty years. They require very little attention either in the matter of pruning or the attacks of the serious pests that prey on many shade trees. Aside from the well distributed foliage displayed during the summer months which makes the tree desirable for shade purposes is the striking appearance presented by the tree during the winter with its white bark and its pendulous ball-shaped fruit.



Photo by H. R. Francis.

BROAD STREET, STAPLETON, STATEN ISLAND.

An example of a semi-business street where few trees have been planted, but where there is a great opportunity for planting trees. Streets with such a width as illustrated in this photograph offer opportunities for planting trees at a small expenditure of money or labor.



Photo by H. R. Francis.

A STREET PLANTED WITH TREES OF UNDESIRABLE VARIETIES WHICH ARE NOT UNIFORM IN SIZE, IN DISTANCE OF SPACING AND IN DIFFERENT HABITS OF GROWTH.

This is the result accompanying individual effort in street tree planting where each property owner plants a tree without due consideration as to the value of a tree as a unit in the planting scheme of the street as a whole.

connection with the work in each Forester's department.

A MUNICIPAL NURSERY

A municipal nursery, which should be established where soil and location would be most advantageous, should be under the control of the bureau as a whole. One municipal nursery could easily serve all the boroughs. This municipal nursery could be put in the charge of a trained arboriculturist with special experience in nursery work. A nursery of about 100 acres would serve the purpose of supplying trees for the forestry work of the entire city.

THE QUESTION OF COST

The initial cost of planting trees on city streets should be borne by the owners of property along that street, which is the same method used for other street improvements. The care and maintenance of trees should be borne

by the general tax. Trees planted after the Bureau of Tree Culture has been formed should be guaranteed for life as long as the street remains in condition to warrant growth of trees. Trees other than those planted after the Bureau has been established and those that are in condition necessitating removal should be taken out at the expense of the property owner. Property owners should be responsible for injuries due to falling of trees, etc. When trees are removed for other reasons than their dangerous condition, for instance, killing of trees by gas, the tree being in a firm and safe condition for several years thereafter, a permit should be granted for its removal upon the deposit of a sum sufficient to plant a new tree at or near the old location. This would mean that the gas company, for instance, would be responsible for the replacement of a new, live tree.

COMBINE AGAINST FIRES.

COOPERATIVE agreements involving the Forest Service, the State of Montana, and the Northern Pacific Railroad have just been renewed so that they will extend through the fiscal year ending June 30, 1915.

The agreement with the State of Montana provides that Federal and State patrolmen shall cooperate to form one single force for handling forest fires. This force, in any locality, acts under the direction of the forest supervisor in charge of the nearest national forest. This arrangement is entered into, according to the agreement, so as "to secure the greatest efficiency and avoid duplication of patrol." The agreement applies to all Government and State lands lying within the exterior boundaries of the national forests in Montana.

The number of patrolmen supplied by the State is in proportion to the acreage of State land within each national forest. No patrolman receives less than a certain minimum wage and appointments by the State must be approved by the district forester. State patrolmen are made Federal "forest guards," and are employed particularly during the four months deemed by the district forester to be the ones most likely to have forest fires.

All lands within the various forests are thus patrolled against fire. The agreement provides that each patrolman, Federal and State, "shall keep vigilant lookout for forest fires and shall make every possible effort to extinguish them whether on lands belonging to the State or to the Government or on lands adjacent thereto where the fire threatens such lands."

Besides the State and other lands, there are scattered through the national forests in Montana many tracts, usually in alternate sections, owned or claimed by the Northern Pacific Railroad. The agreement between this railroad and the Forest Service provides for the same kind of cooperative patrol that exists between the Government and the State of Montana.

A third agreement, a continuing one, provides for cooperation between the Forest Service and the State under the so-called Weeks Law for protecting State and private lands on the watersheds of navigable streams. The Government allots the State the sum of \$3,500 a year, which is expended for the salaries of Federal patrolmen, and the State agrees to expend at least an equal amount for fire protection purposes of any character.





MT. LASSEN IN ERUPTION.

A FOREST FIRE LOOKOUT STATION ON TOP OF THIS MOUNTAIN IN CALIFORNIA WAS DESTROYED DURING THE RECENT ACTIVITY OF THE VOLCANO.

THE LOOKOUT ON MOUNT LASSEN

By WILLIAM C. HODGE

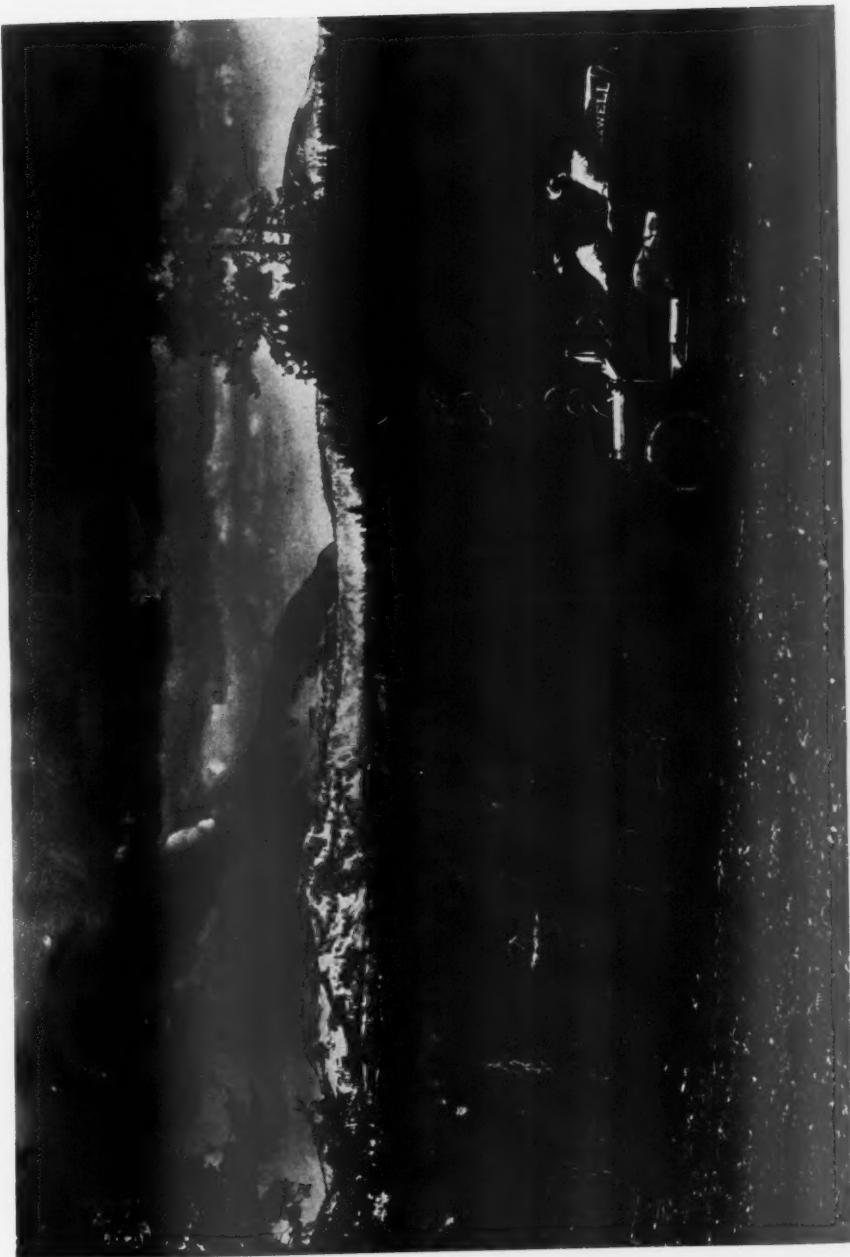
THE forest fire lookout house on Mount Lassen was destroyed by the eruption of June 12th.

After the first eruption, which occurred May 30th, the summit was pick scaled by Ranger Harvey Abbey of the Lassen National Forest, who left Mineral at 4 p. m. May 31, and arrived on top next morning at 9 a. m. He found the house unharmed. The crater from which the explosions were issuing was situated about a quarter mile from the lookout house; but the crater at

this time was small, measuring only 25 x 40 feet and the eruptions, although spectacular, were not yet considered dangerous.

On June 12th, after eruptions had occurred on June 1st, 2nd, 8th and 9th, Abbey made another ascent with a party which included a moving picture outfit.

One of the party suffered from fatigue, being unused to mountain climbing, and in consequence they took considerable time. At 3:45 p. m., while



DURING THE HEIGHT OF THE ERUPTION,
OWING TO THE FALL OF STONES AND ASHES IT WAS UNSAFE TO GO MUCH Nearer TO THE MOUNTAIN THAN ARE THESE SPECTATORS. THE SKY FOR DAYS WAS
FILLED WITH MASSES OF SMOKE CLOUDS SUCH AS ARE SEEN HERE.



THE LOOKOUT STATION.

There was not a single part of this station which could not be carried by a man, and all of it was transported to the peak by men. Instead of windows it had a ribbon of glass around it, affording an uninterrupted view to the man inside.



BEFORE THE ERUPTION.

A VIEW OF THE PEAK FROM CLOSE QUARTERS A FEW WEEKS BEFORE THE INTERNAL ACTIVITIES MADE THIS GROUND HAZARDOUS.

they were still half a mile from the peak, a terrific explosion occurred and they had to run to escape the shower of stones.

This eruption was brief and Abbey resolved to take another chance, which he did. He found the crater greatly enlarged and the roof of the lookout house punctured with rocks. One had fallen upon a rafter but instead of smashing things it had merely sliced its way through the timber.

The explosion of June 14th seriously injured two sightseers who were caught in the rain of rocks.

Eruptions still continued at intervals and the peak is regarded as unsafe for visitors and untenable as a lookout.

The lookout cabin on Mount Lassen was one of the most interesting in California even before its destruction.

It was carefully designed by former Supervisor Kling. No one part was larger or heavier than could be packed on a man's back and by an ingenious

method of joints the house when set up in the shop in Red Bluff was as stable and rigid as a fort and the house was then taken apart and the pieces transported as far as possible up the mountain by wagon. The pack horses were used as far as they could go; finally giving way to the most primitive means of transportation—men's backs.

The house was 14' x 14' and was provided with every appliance needed by the lookout man in the performance of his duties. Instead of one or few windows, it had a ribbon of glass extending clear around the building, affording a practically uninterrupted view for the man inside.

Forest Supervisor Rushing has taken steps to equip for lookout purposes another peak in lieu of Lassen. The point is Brokeoff Mountain, a few miles distant.

At last accounts the crater measured 600 feet by 150. No flames or lava have been seen at any time.

ARREST FIRE LAW VIOLATORS

TWO convictions in Washington for burning slash without permit from a fire warden, damage amounting to perhaps \$5,000 to logs and logging equipment in the same State through fires in slashings, but no loss of green timber, is the Pacific Northwest record for June, the first month of the 1914 forest fire season, according to bulletins received from several States by the Western Forestry and Conservation Association.

All protective agencies were placed on the alert at the close of June by the prospect of a drying interior wind, but the new forecast service especially for forest fire conditions which is supplied by the United States Weather Bureau soon reassured them that the threatening high pressure in western Canada had split into two areas and the danger was for a time averted. Nevertheless, all patrol forces are being rapidly recruited for the season and about 2,000

men will be on duty in a few days in Oregon, Washington, Idaho and Montana. About 500 patrolmen are employed in these States by the timber owners' protective associations, nearly 200 by the States and the Government jointly outside the national forests, and the others by the Forest Service within the national forests. The British Columbia Government also has 225 men on duty.

July hazard to be guarded against, other than from camp fires, was chiefly in slash burning to clear land and rights of way and in leaving fires thus started to smoulder in logs and stumps to break out later when the inevitable hot and windy weather arrives. Forest officers announce that State laws regarding burning without permit and precaution will be enforced rigidly and also warn summer camping parties to be extremely careful with camp fires.



SUGAR CANE SIXTEEN FEET HIGH.

THE WRITER AND HIS HORSE ON LAND BUT RECENTLY PLANTED TO SUGAR CANE IN CAMAGUAY PROVINCE, CUBA.

CRUISING IN CUBA

By E. V. PRESTON

I RECENTLY spent some time in examining a tract of timber in Camaguay Province, Cuba. To reach this tract we were obliged to leave the railroad and travel by horseback for a distance of forty miles. This part of the trip led us over a level country which for the first five miles was largely planted in cane fields and grapefruit groves. After that the country became wild, with settlements miles apart and no roads except cart trails through the woods. The timber was all small and of little value except for railroad ties and fence posts. The under-brush and vines were so thick that we

could not go through without cutting a way with a machette.

The royal palm also grows plentifully on these lands. The natives use this tree for building their houses, the leaves for roof and sides, and the woody shell of the trunk split up into strips for the frame. These trees bear bunches of seed every month, and hogs are fond of them. A native Cuban told me that four or five trees would supply seed enough to raise and fatten one hog. The natives also find the tree serviceable for making bee hives, using a section of the outside shell about 30" long. The inside of the trunks of the palms



FAMILY OF NATIVE CUBANS.

WITH THIS FAMILY THE WRITER AND HIS TWO GUIDES STAYED ONE NIGHT WHILE LOOKING OVER A TIMBER TRACT IN CAMAQUAY PROVINCE, CUBA.

are pithy and soft and easily removed, leaving the hard, woody shell. The honey business is very large among the natives, many having several hundred swarms.

Arriving at the tract of timber we sought, which contained 640 Caballarias (a caballaria is 33 1/3 acres), we found a much better class and stand of timber than any we saw on the journey. The royal palms grew thickly and the underbrush and vines had to be cut away before we could leave the cart trails to go into the timber.

The different species of hardwood timber found on these lands are Acano, Spanish Cedar, Ocuje (pronounced O-coo-he), Mahogany, Jique (He-kev), Guaymaro, Jucaro (Hoo-cay-ro), Saba-

cu, Majagua (Mah-hah-gwa), Morura, Cuban Oak and a species of Rosewood and Ebony.

The Acano trees grow to a large size, the wood is hard and very beautiful, resembling Rosewood. The Morura is used for cart hubs. Jique is durable and never decays. Jucaro is dark colored wood used for cart spokes. Sabacu is used for cart felloes and counter tops. Ocuje is used for furniture. Majagua is used for furniture, cart tongues, etc. All of these species run from 16 inches in diameter at the stump to 48 inches and from 20 feet to 48 feet to the limbs. The Mahogany and Cedar run from 18 inches in diameter up, but are mostly short bodies from 20 to 30 feet long. The Ebony



ANOTHER CUBAN FAMILY.

One of the guides of the writer was the proud father of this representative Cuban family of nineteen children. The family home is thirty miles from the railroad in the northern part of Camaguey Province, Cuba.

is small, from 8 to 12 inches in diameter and short bodied.

These lands will cut from 2,500 feet to 5,000 feet per acre of good saw logs of the different varieties. There is also quite a quantity of tie timber and fence post timber. At least 60 per cent of the standing timber is Ocuje, the balance about equally divided among the other varieties.

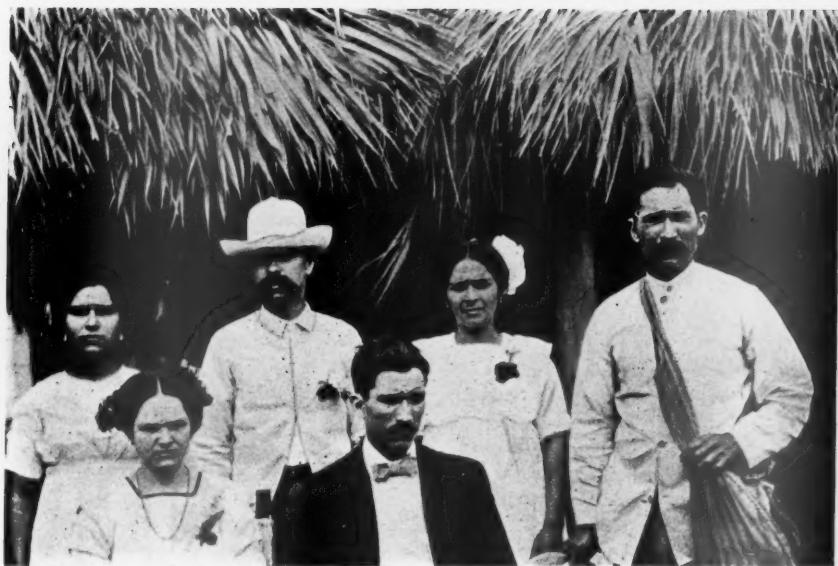
I saw where large Mahogany and Cedar had been cut and hewn on these lands, I should judge more than 100 years ago. This timber must have been hauled to the seashore, which is twelve or fifteen miles to the north. Most of this tract of land is level and fertile, part of the tract, however, is on a mountain side probably 2,000 feet high.

The Jaguay and Coupey trees first grow like a thin vine clinging to some large tree. This vine grows to the top

of the tree, then proceeds to put out laterals around the tree it clings to and finally kills it. By this time it has grown all around the dead tree and has formed itself into a perfect forest tree, sometimes four feet in diameter. The wood is soft and useless.

Three varieties of trees are used largely for fence posts—the Almasaca, Cienella and Jobo. All of these posts when stuck in the ground as fence posts take root and branch out into trees. And it is a common sight to see wire fences with growing posts.

Taking them as a whole, the woods of Cuba are wonderful. Their lasting qualities are remarkable. Some varieties seemingly never decay. I saw Jucaro and Jique wood in an exposed place in Moro Castle, Havana, said to have been there over 300 years, that was sound, apparently, as ever.



A SMALLER FAMILY.

THE TWO GUIDES OF THE WRITER AND THE FAMILY OF ONE OF THEM AT THEIR HOME IN CAMAGUAY PROVINCE, CUBA.



JIQUI WOOD FENCE.

THIS FENCE IN CAMAGUAY PROVINCE, CUBA, IS OVER ONE HUNDRED YEARS OLD AND SHOWS NO SIGNS OF DECAY.

We found the native Cuban very accommodating and hospitable. They live easily in quite a primitive way. All of them raise large families, some houses where we stayed at night having from fifteen to twenty-four children. I don't know where they put them all at night: for they always gave us room to hang up our hammocks.

I found many Americans in Camaguey Province, near the railroad, raising grapefruit and sugar cane. Sugar cane grows here from 15 to 20 years from one planting, requiring no cultivation during that time. The land is first cleared by cutting down all brush and timber and then dry burned. The cane is planted among stumps and logs by using a bar to punch a hole in the ground and sticking in a piece of cane. After fifteen or twenty years it is plowed and new cane planted.

I saw a small circular-saw mill at Moron, Cuba. They were cutting all kinds of native woods. Most of the logs came from a distance of twenty miles and were hauled in cane carts, in a most awkward manner. The capacity of this mill, I should think, was about

3,000 feet per day, and most of the lumber, after being sawed, was cut up into cart material.

I also saw a small band mill in Havana. It sawed logs that were shipped in on cars from the lower end of the island. All of the lumber cut in this mill was worked up into carts, furniture, interior finishes, etc., in a factory connected with the mill.

There are few mills on the island and very little timber. What timber there is, I was told, is in Oriente Province and Camaguey Province. The tracts that I looked at are said to be the best timbered tracts on the island.

A railroad has been surveyed near these lands and will probably be built this year. This would give this part of the island an outlet which is greatly needed. The timber could then be handled and the lands, which are the very best cane lands, could be put into cane cultivation, tobacco or fruit.

I took a great many views of the timber, but owing to the thick brush and heavy overhead foliage and shadows few of them were good.

MY HEROES

By J. R. SIMMONS.

I stood, today, beneath a mighty tree,
And gazed upon its lofty trunk and crown,
Scarred body, branches gnarled and leaves of brown;
In silence looking upward wonderingly.
Full oft have I thus pondered on the sea,
Or on the mountains, when the sun was down,
Upon their age and grandeur, or the sound
Of rushing waters and the whispering breeze,
To waken and inspire the best in me.
Comes then the thought of those strong men I've known
Who've stood and fought their battles, like this tree.
They know it not, but when each deed is done
Of theirs, I marvel e'en as silently,
And owe them each small victory I have won.



PILE OF HEMLOCK BARK.

TONS OF THE BARK PILED IN THE WOODS OF GARRETT COUNTY, MARYLAND, READY FOR SHIPMENT TO A TANNERY.

THE STORY OF HEMLOCK

By HU MAXWELL.

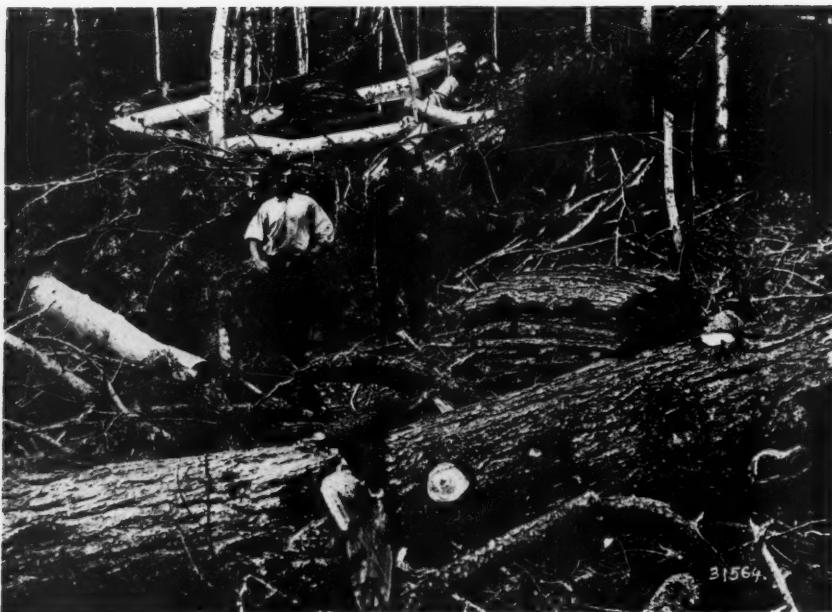
NOT so long ago, when some of us were grown men, and others were only boys, the well-known hemlock tree was valued only for its bark, and after this had been stripped off the logs were left to rot or to burn in the woods. Now the logs are more valuable than the bark. Also, due to the early reckless cutting of the trees for their bark alone, and to the fact that hemlock finds it difficult to reproduce itself the supply of the wood is rapidly diminishing, and it will not be many years before hemlock will practically disappear from the forest lands east of the Rockies.

At present it serves many useful purposes, quantities of it are used in paper making, it makes an excellent railroad cross-tie, it is fine for box making because of its clear whiteness, it is good for staves, many use it for siloes, and it

is claimed to be equal to white pine for building barns and fences, while it is in demand for making caskets, furniture and even musical instruments.

Hemlock was one of the earliest tanning materials in the country, and it is still used to a greater extent than any other, though the production is declining. The number of trees felled for their bark alone in past years almost surpasses belief. The fact is, hemlock has been the victim of the worst forest wastes of all the many that have occurred in this country. The mistaken notion of early times that the wood possessed little value was responsible for part of the destruction. The bark was bought by tanneries, but there was no bid for the wood; consequently, no one was disposed to protect it.

Years before lumbermen would look at the tree, bark peelers were felling the



BARK PEELERS AT WORK.

THE PEELERS HAVE STRIPPED THE LOGS IN THE BACKGROUND AND ARE READY TO ATTACK THE BIG LOG IN THE FOREGROUND. IN THE EARLY DAYS OF THE INDUSTRY THESE LOGS AND SLASH WERE LEFT IN THE WOODS TO ROT.

finest trunks by thousands. It was not unusual for extensive tracts to be stripped of hemlock timber without a single log going to sawmills, a cord to pulp mills, or even a railroad tie saved from the wreck. The peeled trunks lay criss-crossed upon hundreds of acres, after the bark was sledged down the tote roads to the railway spur to be loaded on gondolas for the tannery. Fire always followed and completed the desolation; for the immense tangle of tops and trunks furnished so much fuel to the flames that any trees which may have been left standing were killed, root and branch.

Fortunately, that destructive system is practiced no longer; for the logs are more valuable than the bark, and are removed before the fire season arrives. The value of the annual harvest of hemlock bark is between six and seven million dollars. It weighs about 100,000 tons. The production in the leading States is: Pennsylvania, 254,434 tons; Wisconsin, 123,763 tons; Michigan, 88,-

061 tons; West Virginia, 17,661 tons; New York, 16,447 tons; Massachusetts, 26,889 tons.

It should be explained that the foregoing figures represent the quantity of bark used in the States named, which is not necessarily the amount actually peeled in those States; but tanneries are usually located in the regions of chief supply, because it is more economical to build tanneries near the bark than to ship the bark to distant tanneries.

REGROWTH IS SLOW

Hemlock forests rate low in their ability to reproduce. The woodsman's axe can destroy the hemlock forest more speedily and more completely than in the case of any other important timber. It is because seedlings must have abundant shade, or they will perish. When the sunlight is let in, by the felling of the trees, the seedlings dry up and die. That is one of the reasons why young stands of this timber are not coming on where the old have been

removed; and the result is being felt. There is no second growth, and the pulpwood cutter is the first person to feel this loss, because he takes trees which are smaller than the lumberman can use.

Two and a half million cross-ties are hemlock's annual contribution to the country's railroad construction. Like pulpwood, these are usually cut from timber of medium size.

Stock coopers use ten million hemlock staves yearly in their products. Most of these are for cheap kegs or small barrels, but a higher class of cooperage demands some of this wood for pails, buckets, and tubs.

Hemlock timber has a reasonable share of shortcomings. Many trunks are wind-shaken; ice cracks are numerous in old specimens; and multitudes of hard knots are characteristic of the lumber. Yet large trunks contain a fair proportion of clear wood suitable for high-class work, such as doors, window frames, and flooring. It has low rating as a figured wood, nor is it praised on account of pleasing color; yet select stock shows agreeable grain formed by the arrangement of the annual rings of growth; and the slightly pinkish tint is delicate and pleasing.

ITS SHARE OF PRODUCTION.

Though hemlock supplies about six per cent of all the lumber production of the United States, it fills other important places in the list of the country's resources. More than half a million

tons of paper pulp are made of this wood yearly. It is next to the largest in production, spruce alone rating above it. The pulp made from hemlock is fourteen per cent of the total output. The yield, however, is not increasing. As in the case of lumber, the maximum seems to have been reached, and for the



FROM CUTTING TO RAILROAD.

This hemlock bark has been brought down the mountain on sleds to the loading platform on the railroad spur, the scene being in North Carolina.

same reason—diminishing resources of raw material.

The markets opened their doors to hemlock only gradually. The wood's early uses were few and small. Builders of ships and boats seem to have been the first to give it a place. That was at a time when white pine was plentiful in the North and East. No general demand for hemlock was found until



FINE HEMLOCK AND TYPICAL FOREST SURROUNDINGS.

This splendid specimen grew in a deep ravine among the high mountains of West Virginia. The great laurel or rhododendron is seen in all its vigor ready to engage in rivalry with the hemlock seedlings to possess what little vacant ground may remain in the deep shade. A beech near by has held its own in competition with the hemlock. The largest tree is 4½ feet in diameter. Few hemlocks attain greater size or smoother trunk.

white pine's increasing cost invited substitutes for that wood. One of the first places filled by hemlock was on the farm, where fences and barns were built of it. In most respects it was equal to white pine for those purposes. It did not work quite as easily, but not much cutting and fitting were required in building a plank fence or in framing and siding a barn or granary. Barns and other buildings are still standing,

and are in good condition, which were constructed of this wood from thirty to fifty years ago, and an extreme period of service exceeding one hundred years is on record. Such instances are valuable as matters of history, showing along what lines hemlock was first utilized in this country.

The lines then established have been maintained ever since, with many additions and enlargements.

WHERE HEMLOCK GROWS

The commercial stands of Eastern hemlock are found principally in Wisconsin, Michigan, West Virginia, Pennsylvania, New York, and New England. Timber of excellent quality but not in large amounts grows in the western parts of Virginia and North Carolina and the eastern portions of Kentucky and Tennessee. It is now more abundant in Wisconsin and Michigan than in any other States, the remaining stand there having been estimated at 25,000,000,000 feet. That is sufficient to supply the whole hemlock lumber output, at the present rate of cut, for about ten years. It is believed that not more than half of the hemlock is in Michigan and Wisconsin, and if that shall prove correct, there is supply in sight for twenty years of lumbering. This takes no account of the Western hemlock, which does not occur east of the Rocky Mountains, and which has not yet entered the markets in large amounts.

The output of hemlock has been declining for several years. The cut of lumber in 1912 was 29 per cent less than in 1899. This decline is due solely to the lessening supply of timber. Mills have been cutting out other hemlock and have not gone to new stands where more could be had. This has been occurring throughout the whole range of the tree, from Maine to Minnesota, and from Canada to the southern Appalachian States.

In 1909 a cut of hemlock was reported by 8,572 mills in the United States, and in 1912 the number of mills fell to 5,614. The decrease in the number of mills, however, was not as great as these figures imply, because in 1912 many small mills were omitted from the census returns of lumber.

The total hemlock lumber production in 1912 was 2,426,554,000 feet, which is 200,000,000 in excess of the total of the above table. This difference represents Western hemlock milled on the Pacific coast.

Statistics which have been compiled represent fairly well, but not with entire accuracy, the extent of the hemlock

lumber operations in the several States. Hemlock logs frequently cross State lines, and what is logged in one State may be sawed into lumber in another. That doubtless occurs in New Jersey, Ohio, and Indiana, which have little standing hemlock timber, yet some millions of feet of logs pass through their mills in the course of a year. Logs are even brought across the line from Canada, and boats on the Great Lakes and ships on the Atlantic Ocean may land in regions where hemlock does not grow.



HEMLOCK CONES AND SEEDS, NATURAL SIZE.

The closed cone is the summer form which retains the seed; the open cone represents it late in winter after the seeds have escaped.

The trees usually occur in thick stands, often not associated with any other commercial timber; but at other times they are mixed with hardwoods. In the former case, a logging operation may handle hemlock only, and cut the tracts clean, leaving no young trees for the future. If the timber is associated with hardwoods, it is customary to lumber all at one operation. When that is done, hemlock and birch usually reach the mills together, also with some maple and birch.

RAILS INSTEAD OF WATER.

The spectacular log drives of former years on rivers from Maine to Minnesota were made up principally of white

pine, with not much hemlock in evidence; but in recent years the river drives, though in most instances not so large as formerly, contain more hemlock. No one cared to cut much of it while white pine was plentiful, but hemlock's turn came later, and the spring floods in northern rivers carried millions of logs to the mills below.

The log drive still holds a prominent place in logging operations, but it is not what it once was. The timber is too far back from floatable streams. Railroads must be constructed to land it on the banks, and it is becoming more and more the custom to build the railroads all the way to the mills, and not end the tracks at the river bank. The operation of floating logs is not always as economical as it looks. There are jams to be broken, logs to be rolled or hauled back to the channel after lodging high on shore; and now and then disappointment in expected floods is experienced, while logs are left on the dumps during the summer to become sap-stained, or bored by beetles. Sometimes too much water comes, booms break, and logs scatter to the seven seas.

These and other drawbacks to the drive have stimulated railroad building all the way from forest to mill. Instead of coming in once a year, at flood season, and all in a bunch, the logs now arrive regularly, year in and year out. Floods do not hasten or droughts retard. Twenty-four hours after the tree is felled in the forest, the logs may be on the mill carriage fifty miles away. Sap-stain has had no time to strike, or bugs to burrow.

The popular notion that log railroads are crude, temporary, and of short length, needs revision. Some may be of that kind, but those built for business are not. They compare favorably with trunk lines in the matter of grades, bridges, and tracks. The log train is quite a respectable affair, with from ten

to forty cars, piled high with logs, and moving with a speed which does not in the least suggest lack of locomotive power. The length of some typical log roads exceeds 100 miles. Many mills receive no logs from a less distance than fifty miles. This is a radical departure



BARK PILED FOR FUTURE USE.

This is the generally accepted method of piling the hemlock bark for use when it is needed. These piles, at Ridgeway, Pa., are the property of the United States Leather Company.

Sap-stain has had no time to strike, or bugs to burrow.

from methods prevailing some years ago when hemlock was just beginning to edge its way into some of the most convenient mills.

THE USES OF THE WOOD

Perhaps the best general view of the range of hemlock's uses can be obtained by examining somewhat minutely its uses in a typical region. It is true that the utilization of wood in one locality is



AN ORDERLY HEMLOCK LUMBER YARD.

The boards are well piled, assuring that they will air season without warp, curve, split or twist. Care in manufacturing and handling has been largely responsible for the popularity of hemlock lumber. The user gets it in good shape.

not always a criterion, or even an index, of its uses everywhere; but when the region so selected is large and representative, it should serve as a reliable guide. If Ohio is chosen it makes a good showing. It is not a hemlock State, but lies near enough to the regions where this timber grows to draw freely from it, and to provide a good market. The following table outlines the market for hemlock in Ohio:

Industry.	Feet Used Annually.
Planing mill products.....	13,675,000
Boxes and crates.....	1,267,175
Machine construction.....	260,000
Caskets and coffins.....	250,000
Agricultural implements...	207,000
Furniture	202,000
Ship building.....	100,000
Car building and repairs...	65,789
Musical instruments.....	48,000
Patterns and flasks for foun- dries	30,000
Doors and blinds.....	30,000
Tanks and silos.....	30,000
Total.....	16,164,964

Each of the foregoing items represents many uses for hemlock. Planing mill products, for example, include ceiling, siding, flooring, and many kinds of interior and exterior finish. This class of articles consist of lumber which has passed through a planer and is ready for use without further work, except such cutting and fitting as carpenters give. It is stuff that is made for the general market, and not for some particular job, and is not made according to some contractor's specifications. The planing mill which turns out flooring, ceiling, and siding is often operated in connection with the saw-mill which cuts the rough lumber; in fact, the two mills are not infrequently under the same roof. The planing is done primarily to fit the stock for market, but the matter of lessening freight on the shipments is also duly considered. The shavings removed from such stock decreases the shipping weight several hundred pounds on a thousand feet. That item is worth saving; for the stock must be dressed before it can be used.



AN UP-TO-DATE BARN AND SILO BUILT ENTIRELY OF HEMLOCK IN 1912.

THIS MODERN BUILDING IS AT HEMLOCK HILL FARM, ONTONAGON COUNTY, MICH. THE BARN IS 36 FEET WIDE, 105 FEET LONG; THE SILO IS 12 FEET ACROSS AND 34 FEET HIGH, AIR-SPACED AND FROST PROOF.

and it is economy to dress it near the beginning of its journey to market, rather than at the other end. It is poor policy to pay freight on shavings when nothing is gained by doing so. This accounts for the great development of what is known as the planing mill products industry, which means that, before lumber is sent to market, it is manufactured one step further than the rough lumber stage.

The box maker is a large buyer of rough hemlock lumber. It is usually the low grades which go to this factory. The box maker is in a position to get most out of lumber of that class, because he cuts it into small sizes and can use everything except what is actually worthless. Some other industries are not so fortunate. If they work low-grade lumber they must often throw away good material because they cannot make use of adjacent defects.

Hemlock is excellent box material where much strength and moderate weight are wanted. It possesses extraordinary nail-holding power, which

is due to the presence of a large amount of tannin in the wood. That substance combines with the iron and favors a cement which grips the nail so firmly that it can be withdrawn only with difficulty. This property is of special value in crate material, and large amounts of hemlock are used for that purpose. In quantity it ranks near the top of the list of all woods of the United States for this use. The following States are among the most important users of hemlock for boxes and crates, and the figures give the annual demand and the average prices paid.

	Ave. Cost at Factory	Feet Used.	Per M.
Illinois	34,472,000		\$13.42
Michigan	27,523,000		12.08
Massachusetts ...	27,394,000		17.31
New Hampshire..	20,035,000		15.00
Wisconsin	17,657,000		11.08
New York.....	10,448,000		19.50
Maine	4,704,000		14.72

These prices are for box lumber de-



"ANCIENT OF DAYS," A HEMLOCK BARN 104 YEARS OLD.

It was built on the Ernest Mathews Farm, Wolcott, N. Y., in 1810. The frame is beech, the roof boards and siding hemlock. The present roof is of hemlock shingles laid 20 years ago. The building has never been painted, and its state of preservation is apparent in the picture.

livered at the factories after all freight and handling charges have been paid.

The wood's whiteness is one of its chief recommendations to box makers, for painting, printing, and stenciling show finely on the finished box. This property is desired by shippers who place their advertisements on the shipping containers which carry their products to market.

The builders of machines find this wood well fitted for the sills, frames, foundations and other wooden parts. Beams of considerable size are in demand when heavy machines are being built and installed in flour mills, saw-mills, shingle mills, mining operations and in similar places. Hemlock is stiff, strong, and is sufficiently resistant to decay.

It is not customary to think of hemlock as having much of a place in the business of manufacturing coffins and caskets, yet statistics prove that it is regularly employed in a number of States. It has two principal places to fill. The largest quantity is worked into the outer boxes in which the cas-

kets are placed. It is a fact that more wood is needed for the rough burial box than for the casket itself. This was one of the first places, after farm uses, where hemlock began to displace white pine. In some localities hemlock is the leading wood in the manufacture of burial boxes.

It is coming into considerable use in the making of the casket itself. It is cut with veneer for cross-banding, and when employed in that capacity it is not visible in the finished article, but is concealed by the veneers of cabinet woods, like oak, walnut, and mahogany, which are glued upon it to form the outer and visible part. More frequently, perhaps, hemlock casket stock is seasoned lumber upon which the veneers are glued. It holds the glue well, and warping and shrinking give little trouble.

The use of this wood on the farm, for buildings, fences, and the like, has been mentioned; and while that is doubtless the largest place filled by it in connection with agricultural operations, it is in demand by the manufacturers of farm implements. It is so reported in

a number of States. The call for it is increasing for tanks, particularly the frames, and for silos where it is sometimes the principal material. New York's annual use of hemlock for silos is 1,190,000 feet, for which manufacturers pay an average price of \$24.39. This indicates that good stock is used, and the rapid increase in the demand for hemlock by silo makers shows that the wood is chosen for its qualities. The silo is a trying place for any building material, and hemlock has there proved its durability.

A categorical list of the uses to which hemlock is put by manufacturers would show a remarkable range. It would include commodities of high class as well as many which are ordinary. The total annual demand for this wood in the United States, for manufacturing purposes, is 7,08,552,169 feet. That does not include what is used as rough lumber without further manufacture, nor does it include pulp, cooperage stock, cross-ties, or mine timbers. In the State of New York alone the following uses of hemlock are listed:

Agricultural Implements,	Flooring.
Baskets,	Furniture,
Blinds,	Gates,
Boxes,	Instruments
Cars,	(Musical).
Crates,	Machines,
Dairymen's supplies,	Machinery (Electrical),
Doors,	Patterns,
Fencing (Pickets)	Sash,
Flasks,	Ships,
	Sporting goods,
	Vehicles.

About 32 per cent of all the hemlock lumber cut in the United States is further manufactured before it reaches its final use. In round numbers, two-thirds of the lumber is used in its rough form, and one-third passes through factories or shops to be converted into commodities.

THE PRICE OF THE WOOD

It is medium-priced among the softwoods with which it comes in competi-

tion. More of them are above than below it in mill-yard value. In a list of the commercial softwoods reported by the Bureau of the Census for 1911, where fourteen species are named, the rating accorded hemlock is shown in the following table:

Wood.	Ave. Mill-yard Per M.
Cypress	\$20.54
White pine.....	18.54
Sugar pine.....	17.52
Spruce	16.14
Redwood	13.99
Western pine.....	13.88
Yellow pine.....	13.87
Cedar	13.86
Hemlock	13.59
Balsam fir.....	13.42
Lodgepole pine.....	12.41
Lard	11.87
Douglas fir.....	11.05
White fir.....	10.64

These figures represent lumber in the yards at the mills and ready to ship. There is some change in values from year to year, but no more than changes in the values of wheat, cattle, coal, and other staple articles.

The mill-yard value is the average for all grades, that is, the lumber as it comes from the logs without sorting. This value is not the same in all parts of the country, but the differences are usually small. The value is made up of cost of stumpage, cost of logging, cost of conversion, and other necessary charges. Fifteen States produce hemlock in commercial quantities, and a little is sawed in other States.

When the prices paid for hemlock by manufacturers in certain States is compared with the value at the mill-yards in those States, apparent inconsistencies are seen. In several instances the material is delivered at the factories at an average cost below its mill-yard value in those States. This would seem to imply that the mills deliver hemlock at the factories for less than its value in the mill's own yard. Below is a table which gives hemlock's value at the

mills and likewise its cost delivered at factories in the same States:

State.	Value in Millyard.	Cost De- livered at Factories.
Kentucky	\$12.36	\$11.65
North Carolina.	11.08	12.00
New Hampshire	14.89	14.98
Maine	14.64	14.72
Maryland	14.33	24.04
New York.....	15.50	19.82
Vermont	14.65	14.28
Michigan	12.44	11.83
Massachusetts ..	16.51	17.34
Wisconsin	13.03	12.04

Only in New York and Maryland is the difference between value at the yard and cost at the factory as great as would be expected, and Maryland neither produces nor uses much hemlock.

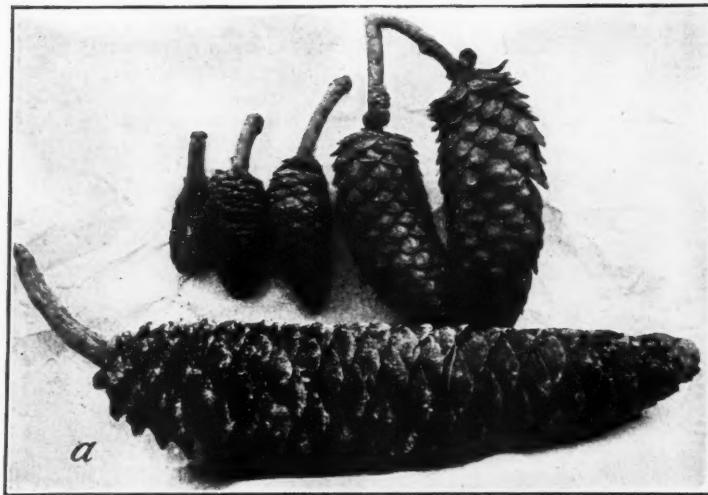
In some instances, factories buy their hemlock for less than its value in the millyard, because much that they buy was never at a sawmill. It comes to the factory as logs, and at a cost so low that the general average of all purchases of hemlock is cut down. In this way some of the apparent inconsistencies may be explained. The further fact is brought out also, by inference,

that the country's sawmill cut of hemlock does not show the whole production of this wood.

The general market buys hemlock in grades, not on mill run. An equitable comparison of prices of this wood with others should be made grade by grade, or as nearly as may be. When the wholesale prices of hemlock are considered on the basis of grades, they are found to be wholly consistent. Differences in prices in different regions are largely accounted for by differences in freight charges. The markets recognize Lake States hemlock and Eastern States hemlock. The two may go to the same markets, but usually they do not. Lake States hemlock, two-inch piece stuff, SISIE, 2"x4"—16', in 1912, was worth \$19.39 in New York State, \$16.84 in Wisconsin, and \$16.52 in Michigan. Rough timbers, 4"x4" to 8"x8"—16', were worth in New York the same year \$18.75, in Wisconsin \$17.79, and in Michigan \$16.85.

Eastern States hemlock in 1912, of the grade 8/4 merchantable, 4" to 12", 10 to 20', was worth \$18 in Pennsylvania, \$19 in New Hampshire, \$16.75 in Vermont, and \$16.75 in Maine. These examples suffice to show regional variation in prices.





CONES ATTACKED BY THE CONE BEETLE.

These sugar pine cones show effects of the cone beetle attack at different stages of the growth of the cone. The longer cone, about 14 inches in length, resisted attack, while the others were killed.

PESTS IN FOREST SEEDS

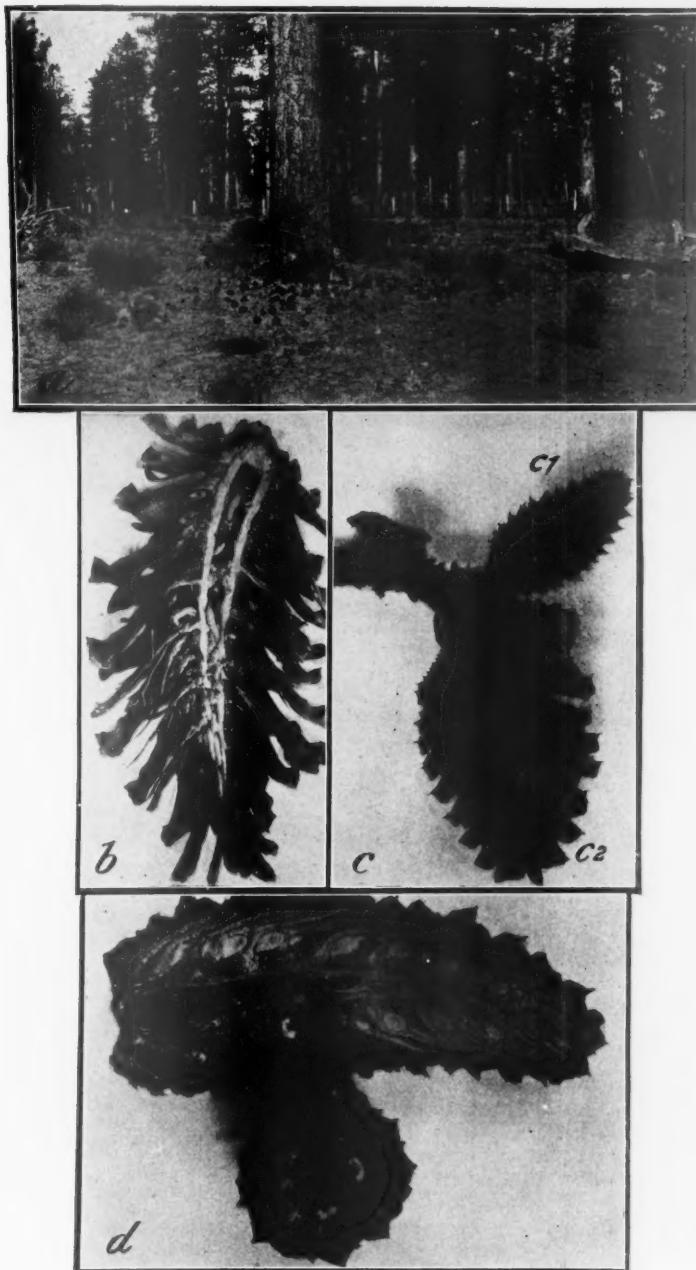
COLLECTORS of forest seeds, particularly on the Pacific Coast, are recommended by the United States Department of Agriculture to make certain that the areas in which they work are not infested by insects which damage the cones and seeds of cone-bearing trees. This damage may readily be sufficient to interfere seriously with the profits of seed-collecting. It has been found, for instance, that much of the white fir seed gathered recently for use in the Western national forests is worthless. In order to avoid, therefore, the waste of time and money involved in collecting diseased seeds, the Department advises the careful inspection of sample cones. If cones of the past season are examined during the winter and spring, they will indicate whether or not their particular area is infested, and in July and August, before the seed matures, infested cones will usually reveal immature stages of the insects.

The insects, which feed upon the seeds, may be found in almost any part

of the cone or seen but, with the exception of cone beetles, adult insects are rarely seen in the immature cone. In their immature stages, however, these insects depend for their food chiefly upon the cone scales and seeds, doing great damage before the seed ripens.

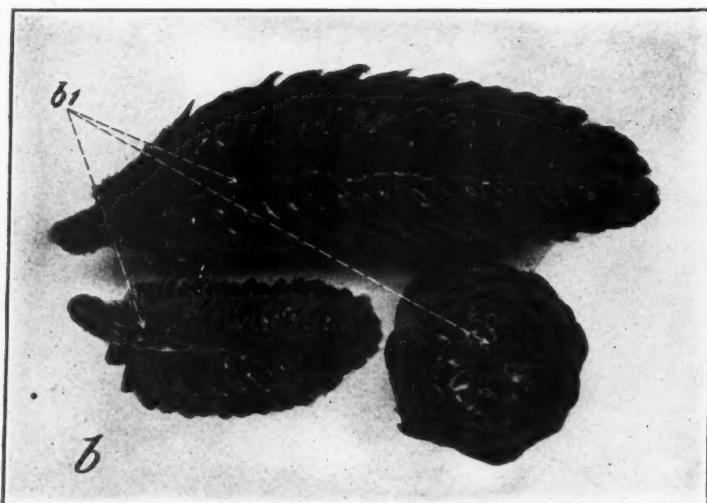
In the case of the pine, cone beetles and some of the cone worms kill the cones when small and immature and before the seeds are filled. Damage of this type is easily recognized and can be estimated after the middle of July. Cones affected in this way are called blighted. In other forms of injury, the cone is not killed but the seeds are ruined by the feeding of larvae. Damage of this kind occurs in every species of conifer and is frequently caused by caterpillars. In California and southern Oregon in 1912, from 50 to 90 per cent of the seed crop of Western yellow pine and Jeffrey pine was damaged in this way, although sometimes there was nothing on the surface of the cone to indicate that it was affected.

This is also true of wormy seed,



WORK OF A CHALCIDID IN SEEDS OF PACIFIC COAST CONIFERS.

a Cross section of sound, mature white fir cone with unaffected seed;
 b, yellow pine seed, enlarged, infested by larvae and newly transformed adults of a seed chalcidid; two unopened seeds show exit holes made by these insects; c, cross sections of two maggoty white fir cones; d, male and female adults of seed chalcidid, larva in opened seed of red fir and exit holes in two other seeds of same. (Original.)



HOW CONES ARE AFFECTED.

THESE LONGITUDINAL AND TRANSVERSE SECTIONS OF THE SUGAR PINE CONES, NATURAL SIZE, SHOW THE PRIMARY EGG GALLERIES, B-1 MADE BY THE CONE BEETLE.

caused by the larvae of tiny wasps, known as seed chalcidids. These feed entirely within the inner lining of the seed, which outwardly presents a normal appearance. Ordinarily the only way to detect the damage is to cut the seed open, when it will be found hollow with the small, headless maggot-like larvae lying in it. Fir suffers especially from these insects. The maggots of flies and midges also cause considerable damage to fir cones.

In looking for evidence of the presence of these various pests, beetles, worms, chalcidids and maggots, it is

frequently necessary to cut open the cone. The beetle, it is true, betrays itself by a small entrance hole at the base of the cone, with castings or small pitch tubes, during the early summer. Later the cones assume a brown, withered appearance. On the other hand, as has already been said, there is no external evidence whatsoever of the presence of the seed chalcidid. The fir-cone maggot and the cone moth can best be discovered by opening the cone, sectioning it in several different ways and then searching for the caterpillars or the active larvae.



FORESTRY AT CHAUTAUQUA

THE largest audiences that ever listened to addresses on forestry heard with pleasure and profit the speakers of the American Forestry Association at Chautauqua, N. Y., on July 9 and 10, when the Board of Directors of the Association, holding their midsummer meeting, agreed, upon request of the Chautauqua Institution, to have speakers give a number of public addresses.

These addresses embraced many phases of forest conservation, and as the audiences were composed largely of teachers from various sections of the country, and as they will carry to their class-rooms the instruction and forestry knowledge they received, the educational advantages of the meeting are evident. Dr. Henry S. Drinker, President of Lehigh University and President of the American Forestry Association, opened the first meeting with a general outline of the forestry movement and of the work of the Association; Prof. J. S. Toumey, head of the Yale Forestry School, followed with an address on the teaching of forestry in the public schools. C. R. Pettis, Superintendent of New York State Forests, spoke on State work in forestry and what may be accomplished by it; Mr.

J. S. Whipple, President of the New York State Forestry Association, told of what forestry has done and could do for New York State, and Harris A. Reynolds, Secretary of the Massachusetts Forestry Association, spoke of the progress made in his State.

In the evening there were illustrated addresses by Dr. B. E. Farnow, dean of forestry at the University of Toronto, on the battle of the forests, and by Don Carlos Ellis, of the Forest Service, on forest fires.

On the second day E. T. Allen, forester of the Western Forestry and Conservation Association, made a deep impression in his talk on the forests, lumber and the consumer; Capt. J. B. White, a native of Chautauqua County and widely known as a leading lumberman, talked in a most interesting manner about forest conservation for lumbermen, and Dr. J. T. Rothrock, a famous forester and first forestry commissioner of Pennsylvania, spoke of the relation of forests to the human product of timberlands. In the evening Dr. Rothrock gave an illustrated lecture on the close relation of soil, water and forests, and J. E. Rhodes, Secretary of the National Lumber Manufacturers' Association, told how lumber is made.

TROUT IN FOREST STREAMS

PLANS to completely restock all trout streams and lakes throughout the national forests of Colorado, Wyoming, and South Dakota, within a period of nine years, are well under way, as the result of the approval by the Federal Bureau of Fisheries of a plan of operation prepared by the Forest Service. The Bureau of Fisheries has promised to furnish the necessary fish fry for distribution to the various forests, the

shipments of fry to be directed to railroad stations nearest the waters to be stocked so that as many streams as possible may be supplied from a central point. The planting of all fry will be performed by forest officers, who will keep close check on the results of the work.

According to the estimates of the forest officers, approximately 20 million trout fry of the brook, rainbow, and black-spotted varieties will be needed

to meet the requirements of all the waters adaptable to the production of trout. Of this great number the Bureau of Fisheries is prepared to supply something over four and a half million this year and a gradually decreasing number each successive year for a total of nine, at the end of which time it is expected that the complete restocking will have been accomplished. The estimates are said to cover 273 streams and lakes in the three States.

The restocking of National Forest streams in all States where such forests are situated, including those now being acquired in the White Mountains and

the Southern Appalachians, will be given attention as rapidly as supplies of fish fry become available for planting purposes. The Forest Service is admirably organized to carry on work of this kind and does so with practically no interference with regular activities since the fish must be handled with the utmost haste and frequently during the late evening or early morning hours. The production of the existing Federal and State fish hatcheries is hardly adequate to meet all demands, however, and therefore the work has to be done in installments.

PRIVATE TREE PLANTING

ONE hundred thousand pine trees are now being planted in the Adirondacks at the expense of Richard J. Donovan, of New York City, who has in the past four years had some 265,000 others planted in the same district, and who is doing much to inspire and encourage other land owners to pay attention to similar work on their own land. "I personally investigated tree planting in the Black Forest in Germany, in Switzerland and throughout the country before planting the forest in the Adirondacks," said Mr. Donovan in describing the planting. "The restoration of the forests in the Adirondacks and in fact throughout the country is the most important economic question before the people.

"Interests in the restoration of the forests of the Adirondacks should be enhanced. It improves the scenic beauty of that charming region. It prevents floods by holding back the water by the leaf mold and little reservoirs that are created by the roots of the trees. It affords places for the melting snow and keeps back the water.

"Conditions in the Adirondacks are ideal for tree planting, especially for pine and spruce, and other conifers.

The cost per acre will vary from \$2 to \$7, depending upon the age of the trees, how far apart they are to be planted, soil conditions, and the efficiency of the tree planters. Small trees can be purchased from the State conservation commission for \$1.50 to \$4 per thousand, depending upon the age of the tree.

"The danger of fire in the Adirondacks is no longer an excuse for hesitating to preserve the forests and restore the forests by tree planting, for the reason that the railroads that heretofore caused the fires are today the greatest protectors that the forests have, because oil is used as a fuel, and a patrol follows each train in the summer time from station to station, prepared not only to put out fires that may be caused from a train, but also to report other fires.

"I should like to see a tree-planting association in the Adirondack mountains that would have enrolled in it every man and woman who owns a foot of land in that delightful region. A beautiful forest can be developed in from 10 to 15 years, which may be seen by the developments where the State conservation commission planted about a dozen years ago."

\$50,000.00 Bond Issue

of the

American Forestry Association

To Members of the American Forestry Association:

It has been decided by the Board of Directors to issue bonds of the American Forestry Association to the amount of \$50,000, paying six per cent interest and redeemable within twenty years.

The money will be used to improve the magazine AMERICAN FORESTRY, put it on a more influential and better paying basis, increase the membership of the Association and extend its very important educational work.

The Association has no debts, it is sound and strong financially; the magazine, AMERICAN FORESTRY, returns a substantial profit, which is used in educational work, but the Directors realize that with money to spend for development work, the Association's value to the general public can be greatly advanced, and its membership largely increased, and at a profit to the Association.

Therefore subscriptions to the bond issue are requested from members who are interested in the development of the Association and the extension of its work. The bonds are to consist of \$45,000 (forty-five thousand dollars) in \$100 bonds and \$5,000 (five thousand dollars) in \$10 bonds. Subscriptions of only \$100 or less are desired, although larger subscriptions will of course be accepted.

Subscriptions may be made direct to the American Forestry Association, or further details will be sent upon request.

SUBSCRIPTION BLANK

AMERICAN FORESTRY ASSOCIATION,
Washington, D. C.

I hereby subscribe for \$..... of the \$50,000 bond issue of the
American Forestry Association.

Name

Street

City



A TYPICAL GAME REFUGE

Stock is being kept out of this area so that it may be turned into a game refuge. The view is looking across Boulder Basin from the South Fork Divide in the Shoshone National Forest. The timber is Lodgepole pine and Douglas fir.

A CHANCE FOR THE GAME

By SMITH RILEY.

HERE are 180 million acres of National Forests in the United States and Alaska, within the borders of which practically every type of forest land is to be found. Excellent forage conditions are everywhere available, and an enormous amount of domestic stock is annually developed and fattened upon the forest ranges. As meat values continue to advance, other ranges, now inaccessible, will receive domestic stock and the number carried yearly by National Forest ranges will be increased. The question is asked: What is to become of the big game that in the past was so plentiful throughout our moun-

tainous country? Must it all go as have some of the species that once occupied the great plains country? Many people have decried the current belief that the game must perish as settlement advances, and that the mountain ranges are needed to summer stock which can be wintered at a profit upon forage crops produced upon the settlers' tillable lands. It would appear from the location of game refuges in different parts of the country that there is sentiment in favor of preserving at least certain species of big game animals. This movement is looked upon by many as founded largely upon sentiment and not as a practical matter.



INACCESSIBLE TIMBRLINE COUNTRY WHICH IS NOT SUITABLE FOR SHEEP, BUT WHICH WOULD SERVE AS AN EXCELLENT GAME REFUGE. IT IS THE BOONVILLE NATIONAL FOREST.

WHERE HUNTERS MAY HAVE GOOD SPORT.



EXCELLENT FOR MOUNTAIN SHEEP.

This area is in the vicinity of the Chicago lakes at the head of Chicago Creek in the Pike National Forest and an effort is being made to have it set aside for the mountain sheep which are plentiful in this region.

The placing of domestic stock upon the range is purely a matter of dollars and cents, and the question arises as to whether we can not consider the game question upon this same basis. There is no mountainous range region in the National Forests but what from one-fifth to one-third of the area is considered unsuitable for ranging domes-

tic stock of any sort, and in many cases, were the matter carefully looked into, it would be found that these so-called unadaptable mountain ranges are well suited for the propagation of game animals. Then again, the proper stocking of mountain ranges with domestic animals does not necessarily preclude the possibility of affording pro-

tection for a reasonable amount of game that would thrive upon such browse or classes of growth which the domestic animals do not use. There are also many areas closed to domestic stock—such as the watersheds from which cities and towns derive their water supplies—where such game animals as the mountain sheep and deer of different kinds would not only thrive

eliminating entirely the sentimental reasons for such protection, is also worthy of consideration. Within the last two years the State of Wyoming has received from \$20,000 to \$25,000 from the sale of game licenses, and the cost of administering the game department has been about half that amount. The purchase of licenses at \$2.50 each for a resident hunter is, of course, a



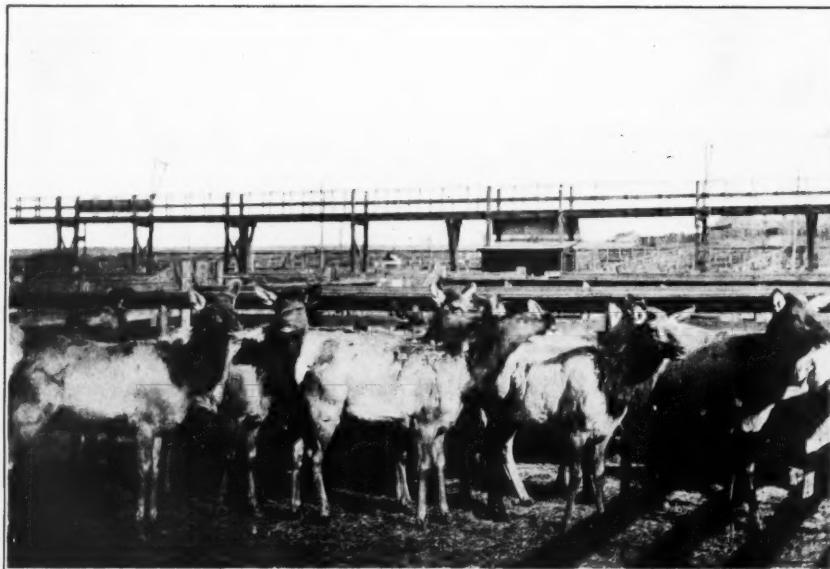
TWO YEAR OLD ELK.

THIS IS THE FINE HEALTHY TYPE OF ANIMAL WHICH CAN BE BOUGHT FROM SEVERAL DEALERS AND WHICH TURNED LOOSE IN COUNTRY SUITED TO THEM WILL THRIVE AND MAKE EXCELLENT GAME HUNTING.

to advantage, but would offer no difficulty in the use of the area for water development. In many of the National Forests there are areas that are becoming valuable for summer resorts and recreative purposes. It is not advisable to allow ranging stock in the vicinity of such localities, and yet game developed in such regions would add greatly to their general attractiveness.

So there is ample range for game. The question as to whether it is worth while upon a dollar and cents basis,

small portion of the amount he actually spends in the hunting region. In the little town of Sundance in eastern Wyoming, it was found after a careful check of over two years, that the average expenditure of hunters in that section was \$36.00. In the Cody country of Wyoming, where many non-resident hunters outfit for the region south and east of Yellowstone Park, it was found that such parties spent from \$400 to \$600 each. These non-resident hunters number from 100 to 200 yearly, so



A NEW SHIPMENT.

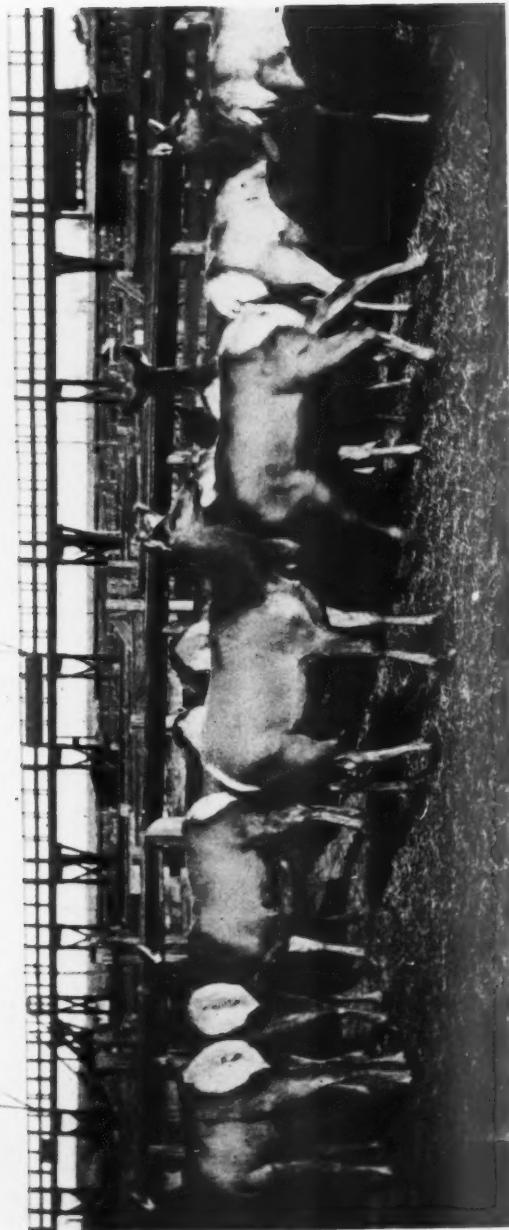
THESE TWO-YEAR-OLD ELK, HARDY AND STRONG, HAVE JUST REACHED THE DENVER STOCKYARDS AFTER A LONG JOURNEY.

the value of the game to that section can well be realized. During the hunting season of 1912 it was estimated that 600 elk were brought out of the Cody country by hunters. A fair weight for these carcasses dressed would be 300 pounds, and at a rate of but 12 cents a pound, the actual meat value of these animals killed would net the sum of \$21,600. Add to this, then, the value of hides, antlers, teeth, and by-products.

One of the most attractive mountain summer resorts in the United States is Estes Park in the Colorado National Forest. Thousands of people from all over the country visit this park annually, and the number of visitors is increasing every year. There is an excellent game region in the vicinity of Estes Park, where there is every indication that elk, mountain sheep, and deer were at one time plentiful. As a straight money investment upon the part of the State and the hotel owners of this region, the protection of existing game for increase, and the introduction of species adaptable to this region, as a means of bringing in more visitors,

is all important. The development of game upon the slopes of Pike's Peak would also be a sound investment to the State of Colorado, and the towns in that vicinity, from a viewpoint of increasing attractions for visitors. The biggest business of Colorado Springs, Colorado City, Manitou, and Cascade is that created by the tourists that visit these towns each year. The existence of sheep, deer and elk, could they be seen in their wild state by campers, burro parties, or from the trains making the trip up Pike's Peak, would be an additional feature there and would attract more visitors.

The people want to see the game protected and will assist any honest and sincere move upon the part of the authorities to this end. It is true that at present there is a wholesale disregard of the game laws in the game States; however, it must be realized that the States are largely responsible for this because of the odium which has grown up around the position of game warden through the class of men appointed to that office. Many of these



YEARLING ELK,
SHIPPED FROM JACKSON'S HOLE, WYOMING, BY THE UNITED STATES BIOLOGICAL SURVEY AND THE FOREST SERVICE. THEY ARE HERE SHOWN HERDED IN THE
DENVER, COLORADO STOCKYARDS.

men in the past have had no knowledge of the regions in which they were appointed and were unable to take care of themselves when traveling in the mountain countries. Other appointees drew the salary attached to their positions, winked at the violations of the law by their friends, and attempted to make arrests or secure convictions for

absolute, and, of course, this served to discourage those who honestly endeavored to enforce the laws. When the Federal Government, through the rangers of the Forest Service, began to cooperate with the States in the enforcement of the game laws on the National Forests, it was an up hill business. Forest officers who, during the



ELK COMING OUT OF THE DIP.

WHEN THESE ANIMALS ARRIVE AT THE DENVER STOCKYARDS THEY ARE AT ONCE RUN THROUGH THE DIP, WHICH IS FILLED WITH A STRONG DISINFECTANT.

game violations only against strangers or against those to whom they were unfriendly.

Of course the violation of the game law enforced by such agents was bound to be considered a trivial matter, and to be arrested by such officers of the law resulted in much bitterness. As the farcical enforcement of the game laws grew up, it became almost impossible to secure convictions before local peace officers, even where the evidence was

early years of federal administration, were in a more or less difficult position trying to enforce the Forest regulations, did not relish the disagreeable task of assisting the State in this work. There were so many glaring examples of difficulties to be overcome that they realized it would be years before the work could be brought to such a standard that the people of the communities would respect and assist in the enforcement of the law. Where this coopera-



A TYPICAL MOUNTAIN SHEEP RANGE.

Mt. Evans in the Pike National Forest from the head of Chicago Creek showing more of the area that is far too rough for domestic sheep and should therefore be designated as a mountain sheep range.

tion has been in effect, happier conditions have been brought about and the people are now showing an inclination to back the officers in prosecutions under the law.

Increased interest and cooperation on the part of stock associations, gun clubs, organizations of sportsmen, and the Order of Elks will eventually force all game States to oust the inactive spoils politician who uses his position only for political ends, and to fill the office of game commissioner with strong men, conversant with game conditions and men who will devote their entire time to game protection. There must be keen cooperation between the State Game Departments and the Federal Government; and the Federal Government, through the Biological Survey and the Forest Service, must take the initiative in studying conditions for placing game upon suitable ranges now unoccupied by game. No large amount of money will be necessary. As has already been demonstrated, the people of the communities near such ranges are keenly enthusiastic about this work and will subscribe liberally towards carrying it

out. The railroads are also interested and have shown a willingness to co-operate in hauling shipments of live game animals within the States free of charge. The great problem at present is to locate specimens for planting, and to figure out feasible methods of capturing and shipping. There is a big field for this work, and the States will fall in with it, provided the Federal Government will show what can be done in this line. For example, there is ample suitable mountain sheep range in the vicinity of Harney Peak in the Harney National Forest of South Dakota. There are several places in Colorado where specimens for such a plant could be captured and the people of South Dakota are ready to furnish funds for the work, provided the Biological Survey will take it up. There is excellent range for white-tail deer in the foothills of the Pike National Forest just west of Denver, Colorado, and such specimens as are needed for introduction there could be captured in the Black Hills National Forest of South Dakota.

THE MISSOURI OUSTER CASES

THE famous Missouri Ouster cases against twenty lumber companies under anti-trust proceedings, have been finally settled. On July 2nd, the Supreme Court of Missouri denied the application for a modification of judgment under the decision of December 24, 1913, reduced the fine imposed on four of the companies and withheld the ouster issued against all of the companies, if they pay the fines imposed, so long as they obey ten conditions outlined in the decision, and withdraw from direct or indirect membership in the Yellow Pine Manufacturers' Association, and all associations of like character.

The influence of this decision is far-reaching, not only in its effect on the existence and function of lumber trade organizations, but on the rights and privileges of individual companies to cooperate to the mutual benefit of both the producer and consumer. The lumber industry, which is now suffering from economic vicissitudes, is likely to be further handicapped by this court decision so lumbermen say.

Some of the companies concerned are understood to be in honor bound not to carry the case to the United States Supreme Court, and by their agreement to accept the present decision there is implied an acknowledgment of guilt, which is not in anywise borne out by the actual facts. Lumbermen say the court was not sufficiently cognizant of the conditions in the lumber business, to consider fully and fairly the economic situation which prevailed in 1907, at the time the lumber output of the State fell off abruptly, owing to the panic which reached a climax in October of that year. The lumbermen acting individually would, no doubt, have saved money if they had shut down their mills completely at the time when the demand for lumber fell off so abruptly; but since instead of that they preferred to take the broader

view of producing enough to keep their mills operating and their employees out of the bread line, they consider it an injustice that they are now fined and prevented from organizing for helpful cooperation, through some legal interpretation which they declare ignores common sense fundamentals.

The lumber trade papers are bitter in their denunciation of the decision.

The *Lumber World Review* of July 10th, says regarding it :

"It is true that the Supreme Court of the State of Missouri has done what we believe to be an unjust and monstrous thing in this alleged land of liberty by fining the lumbermen of that State nearly four hundred thousand dollars and ruling that they will be ousted from the State unless they cancel their membership in the Yellow Pine Manufacturers' Association."

The same hard-hitting trade paper says apropos of the alleged lumber trust agitation in general that :

"There NEVER WAS and NEVER WILL BE and NEVER CAN BE a lumber trust any more than there could be a bread trust or a potato trust or a rain-water trust."

"The Bureau of Corporations and Congress and all the other sections, divisions and bureaus of the United States government might just as well try to dissolve the Baptist, Presbyterian, Catholic or Methodist churches, the National Historical Society, the Society of Physical Research and all the fraternal bodies, as to prorogue, dismantle, annul and kill the business organizations of the country. They might try their hands at knocking out the Chamber of Commerce of the United States and each business institution in turn, but if they did the whole fabric of government would fall asunder."

The *American Lumberman* of July 11th connects the decision with the attitude of politicians towards business interests, by saying :

"This decision * * * goes with pending legislation, with other court decisions and with a manifested attitude displayed in Congress, and exploited by politicians who wish to profit by the arousing of prejudices of a certain class of the voters against all who are apparently successful in business life."

The same paper goes farther and touches on a social aspect of the matter in pointing out that:

"The manufacturer, the merchant and the banker have been the trinity that has led the progress of the world; but now the educator, the legislator, the lawyer, are reasserting themselves and are seeking to relegate to their once despised position the forces back of real progress."

This paper also discusses the fundamental idea in lumber organization, namely, that of cooperation:

"The country thought that it had discovered something worth while in the idea of cooperation as a substitute for competition. Competition was the mother of trusts, the chief means by which the rich were made richer and the poor poorer. It separated classes and was essentially undemocratic in a great democracy like ours. On the other hand, cooperation backed by sound intelligence and good will promised, in spite of possible abuses, to solve many of our modern difficulties. Now it seems, because cooperation may be abused, that we are going back to the unlimited evils of unlimited competition.

"And all this means that the modern business man and modern business are to be pushed back fifty or a hundred years. He is to be told by the dreamer, the idealistic do-nothing, the demagogic politician, that he—the creator of modern civilization—must step into the background and let them to the front. This situation is not one that affects lumbermen only, but business men of all sorts."

As to what should be done, it says:

"Lumbermen, representing one of the greatest industries of this country, one of the greatest sources of its wealth, must stand for their rights as citizens, and not only must so stand with each other but with business men of all classes. Honest business should assume the proud position that of right it should occupy, and no longer cower and apologize."

The *Lumber Trade Journal* of New Orleans, commenting upon the effect of

the decision on the Yellow Pine Manufacturers' Association, says:

"Although the association was not a party to the suit, the judgment of the court scores it without justice or mercy. * * * The association never made prices. It is strange that the supreme court justices could not understand the evidence that was brought to their attention on this point. There was no evidence that the association did make prices, yet the court jumped to the conclusion that a price list means price making. The books of the defendant companies offered in evidence showed there were as many different prices as there were companies.

"It is useless to criticize the opinion of the court, as it will serve no purpose. The most charitable way to put it is to say that the court erred. Every lumberman knows that it did not get the perspective of the case."

Of the effect of the decision on the Yellow Pine Manufacturers' Association, the *Southern Lumberman*, of Nashville, says:

"It would seem that the court could keep the acts and practices of the lumbermen under even better surveillance if they are operating through the Yellow Pine Manufacturers' Association than if a new organization under a different name should be formed. The court has certainly had opportunity to become thoroughly familiar with all the inside workings of the present yellow pine organization.

"It must be that the court has not as fully considered this particular part of its final decree as it should have done and that upon proper showing it will vacate the prohibition as to membership in the association. The court must recognize that there is a legitimate field for organization in the yellow pine industry. It must recognize also by this time that there were many members of the association who were all the time in little sympathy with efforts at price-fixing and curtailment, and that there are many yellow pine lumbermen who have for years refused to have anything to do with the association on account of its activities along these lines; and, finally, that with all effort along these lines abandoned and discontinued the association is in position to render more useful service than ever before."



USING BLIGHTED CHESTNUT

HOW chestnut timber that has been killed by the bark disease can be utilized to bring the most profit is told by the Department of Agriculture in a bulletin just issued for the benefit of farmers and other timberland owners in the States where the blight has appeared. Most of the chestnut timber north of the Potomac River has been attacked and much of it killed by the disease, which is now spreading to Virginia and West Virginia.

Sound wood from dead chestnut trees is fully as strong as wood from healthy trees, and is suitable for poles, lumber, ties, slack cooperage, mine timbers, tannin extract wood, shingles, fence posts and rails, piles, veneer, and fuel. It can not be used profitably for tight cooperage, for wood distillation, or for excelsior.

Disease-killed chestnut does not begin to deteriorate until two years after death, and in most cases it has been found that trees up to 10 inches in diameter can be sawed into merchantable products after they have been dead four years, trees from 10 to 18 inches in diameter after they have been dead five

years, while trees above 18 inches in diameter are merchantable six years after death. It is best, however, to cut and utilize infected trees as soon as possible after they are attacked. Diseased timber is still live timber, and can be sold as such, while dead timber, even though sound, always presents difficulties in felling, manufacturing, and marketing.

In deciding what product to manufacture from his stand the farmer, or other timberland owner, should first consider his own needs for fuel, fence posts and rails, split shingles, construction material for barns and sheds, or even interior finish for a new house. If a woodlot owner has more dead timber than he can use himself or dispose of to his neighbors, he should consider making one or more of the following products to be sold to dealers, railroads, or manufacturing plants: Poles, sawlogs, bewn ties, slack cooperage bolts, tannin extract cordwood, mine timbers, and cordwood for brickyards, lime kilns, brass factories, iron foundries, etc. Any of these products can be made with the tools kept on every farm.

Planting Three Million.

Nearly three million young trees are being set out this spring on the national forests of northern Idaho and Montana. On the St. Joe National Forest in Idaho three thousand acres will be planted.

Students at the Forest Nursery.

Students of the Oregon Agricultural College are working at the forest nursery on the Siuslaw forest. The arrangement is said to be mutually satisfactory, since the students gain experience in forest nursery practice and their assistance lowers the cost of nursery work.

THE CANADIAN DEPARTMENT

By ELWOOD WILSON

Mr. R. H. Campbell, Director of the Dominion Forest Service, has gone abroad for a trip and will visit the different European countries, making a study of administrative questions and forestry methods.

Mr. G. C. Piche, head of the Quebec Forest School, is on his annual field trip with the students. The place chosen this year is Mr. Piche's own estate of about 1,500 acres at Burrill's siding, about thirty miles north of Three Rivers.

The reorganization of the Fire Protection work of the Canadian Pacific Railway by which this work will be handled by the Forestry Department, is a most important change and will increase the efficiency of the work.

The coming convention of the Canadian Forestry Association to be held in Halifax, N. S., from the 1st to the 14th of September, will be a very important one. It is the first one ever held in Nova Scotia, and the attendance promises to be large. Halifax is a beautiful city and contains much of historic interest.

Mr. J. E. Rothery, of the firm of Vitale & Rothery, of New York, has just been elected to active membership in the Canadian Society of Forest Engineers. This election is the first of a non-resident of Canada, the restriction of the membership to Canadian residents having been removed at the last meeting following the lead of the Society of American Foresters. It is desirable that the relations between these two professional societies should be as close as possible.

The long drought and cold weather which continued into June this spring made the fire-protection situation one of

great difficulty. In the territory covered by the St. Maurice Forest Protective Association there were more fires than during the previous season, but all but two were extinguished by the rangers. Settler's fires, which have usually been nearly half of the total number, were reduced by over fifty per cent, owing to the action taken by the Government in conjunction with the Protective Association last season, namely, warning the settlers at the beginning of the season and then arresting promptly and fining all offenders against the regulations. This spring the settlers and their parish priests are joining the Association in a petition to the Government to make a law forbidding the setting of fires for clearing land at any season without a written permit from the fire-ranger of the district. Most of the fires this spring were set by river drivers employed by the companies forming the Association, and stringent measures are to be taken to prevent this next season. The Quebec & St. Maurice Industrial Company have not allowed their drivers to smoke this spring, and this has proved a great preventive. One of the two fires mentioned above was set by the section men of one of the railway contractors burning ties and spread over twenty-five square miles. The section men were warned not to set fires, but their foreman was ordered by their engineer to go ahead, and this was done although the weather was extremely dry. Such gross carelessness on the part of men who are well educated enough to know better is inexcusable and shows the need for education about fires for the general public.

The Lower Ottawa Forest Protective Association was formed too late this spring to allow for getting their field work in proper shape, but in spite of this they did excellent work and demonstrated the value of cooperative effort.

The owners of summer homes and camps to the north of Montreal in the Laurentian Mountains had a meeting and took steps to form an Association to protect their holdings. The leader of this movement is Mr. R. A. Outhet, landscape architect of Montreal, and the members are prominent Montrealers. One of the most enthusiastic members is Mr. Guy Tombs, general passenger agent of the Canadian Northern Railway, which has also improved its system of fire protection along its lines this season.

Snow fell to the depth of five inches about one hundred miles north of Montreal on the *nineteenth of June*.

The Laurentide Co., Ltd., has entered upon a tree-planting program which allows for planting of 500,000 trees per year. A beginning on a commercial scale was made this spring by planting 110,000 Norway spruce, which, up to present writing, have done remarkably well. In 1908 this company began planting, about 20 acres being planted to white Scotch and jack pine. These trees are now from four to eight feet high. In 1912, 10,000 Scotch pine were planted, and in 1913 about 12,000 Norway and white spruce; 10,000 Norway pine and 50,000 Norway spruce will be planted in September. There are now in the company's nursery something over 500,000 seedlings which will be ready for next fall, and the capacity will be kept at about 600,000 per annum. This company has also added to its telephone lines for fire protection and

other uses something over fourteen miles of line this season.

The St. Maurice Forest Protective Association, with the cooperation and financial assistance of the Department of Lands and Forests and the Department of Public Instruction of the Province of Quebec, is issuing in French and English a folder, printed in red and black with cuts, for distribution among school children. These folders are, with few changes in the text, the same as those already used in Pennsylvania and Massachusetts.

The Premier of the Province of Quebec, Sir Lomer Gouin, with Mr. G. C. Piche, Chief of the Forest Service, have just returned from a trip to the Abitibi region, which is being opened for settlement. The report of their trip from the standpoint of the forest resources of this district is awaited with interest.

Mr. Roy L. Campbell has succeeded Mr. R. G. McIntyre as editor of the Pulp and Paper Magazine of Canada. Mr. Campbell is a forestry graduate from the University of Toronto.

The Forest Products Laboratory, in connection with McGill University, will begin active work in the fall. A complete experimental outfit for the grinding of pulp, making of sulphite pulp and of paper is being installed. The work will be in charge of Mr. Bates, who has had much experience along these lines.

A BEQUEST OF \$5,000.00

THE will of the late Miss Elizabeth Shippen, of Philadelphia, bequeaths to the American Forestry Association the sum of \$5,000. This money is given to aid in carrying on the general work of the Association in spreading the doctrine of sane and practical forest con-

servation throughout the country, and the bequest was made by Miss Shippen, for many years a member of the Association, in recognition of the excellent work it is doing, and the great need of expanding the influence and extending the activities of the association.



EDITORIAL

AN excellent plan for inspiring forest planting by cities and towns of a State is outlined in the provisions of the Town Forest Contest instituted by the Massachusetts State Forestry Association, which offers as a prize, to plant to white pine fifty acres of forest land belonging to the winning city or town. The fifty acres thus planted will contain 1,200 three-year-old white pine transplants to the acre.

The city or town entering the contest must have acquired at least 100 acres of land and set it aside officially as a

"Town Forest," and fifty acres of this land must be planted to three-year-old white pine. This planting must be done not later than June 1, 1915, and at least ten cities or towns must enter the contest.

Interest in forestry has been growing so steadily throughout Massachusetts, where, by the way, the American Forestry Association has its largest State membership, that it should not be difficult to get ten or more entrants for this contest, and such a substantial prize as 60,000 young white pine trees planted is worth striving for.

MANY thousands of teachers from every State in the Union will turn to their class-rooms this fall with well-defined ideas of the value of trees and of the forests, the need of protecting the forests from fire, the part the lumberman has played in the progress and development of the country, and the need of teaching forestry to their pupils. These ideas were implanted in their minds by the officers and members of the American Forestry Association, who spoke to them at Chautauqua, New York, on July 9 and 10. There, at large public meetings, addresses, several of them illustrated, were given by some of the most able foresters in the country, men who told of the birth, the battle for life and the growth of the forests; of their dread enemy, fire; of what part they take in the mental and physical development of a nation; of the attitude of the

lumbermen towards forest conservation; of how lumber is made; of what the forests do in the preservation of water supply and water power; and of how forestry should be taught in the schools.

There has never been in all the history of the forestry movement an occasion when so many people, representing so many sections of the country and bearing the close relation they do in the development of public thought and activity, received so much information and instruction in conservation of any kind, as did the evening audiences in the great amphitheatre at Chautauqua during these two days. It was an accomplishment in forestry education which will bear fruit within the next year in thousands of places, and in the minds of tens of thousands of students.

IT IS gratifying to inform the members of the American Forestry Association that the late Miss Elizabeth Shippen, of Philadelphia, has bequeathed to the Association the sum of \$5,000. This was one of many bequests made by Miss Shippen to organizations which in one way or the other are working for the public good. Miss Shippen was for many years

deeply interested in forestry and in the need of educating the people of this country to a realization of all that trees and the forests mean to them and to the country, and she was in hearty sympathy with the work of this association. Her money will be used to aid in spreading the doctrine of forest conservation and inspiring a love of trees and forests as she wished.

THERE is hardly a progressive city in the entire United States which has not in the last few years awakened to the need of having a skilled forester, or else a park superintendent with sufficient knowledge, to take charge of the planting and the care of its shade trees. In many cities this work is by no means easy; note, for instance, the conditions in New York City as outlined in an article in this number, and one of the chief difficulties to be overcome is the ignorance of the average citizen regarding trees. These citizens must not only be taught to give some measure of care to the shade trees in front of their residences and in their yards, but they must be educated to a realization that much of the beauty of a city depends upon the trees in its streets and that liberal appropriations are necessary if the city is to have trees which spur the pride of the citizens.

That Columbia, South Carolina, has difficulties to contend with in this respect is apparent from reports of an address made to the city council by Richard D. Sullivan, a citizen, who voiced an eloquent protest against the damage done to trees by the telegraph and telephone companies of the city. Said Mr. Sullivan;

"It is more than passing strange in the ordinary justice of things in this day and generation when a citizen finds it necessary to stand before an assembled body of men and plead for the lives of common shade trees. But, gentlemen, such is the case, and here I am.

"There never was and never can be presented a bona fide argument against

the growth of trees and their proper care. True, the commercial interests of a great social body like this city may necessitate a few treeless thoroughfares; we can and do understand such a condition. But the time will never come when there will be justification for cutting the vitals of city shade trees that have required years to develop, simply because men who do not understand and care nothing for the beauties of horticulture have authority from the city to cut and destroy them at will.

"The best brains of America, of Europe and of the Orient," said Mr. Sullivan, "have proven that trees can be made to perform service for mankind in shade, in decoration, in fuel and in building material without injury to the basic growth. In the Netherlands, where trees are grown for fuel, these treasures are jealously protected. The beauty of the public highways and woodlands of England, France, Germany and other countries is enhanced by the scrupulous attention given the forests and shrubbery. The broad avenues and boulevards of many of our own cities have been praised by foreign and domestic visitors alike.

"I wish to contravene the rights of no man. My only hope in thus coming before your honorable body, is for the general betterment of our city to the end that it may be a more beautiful spot for strangers and our friends to visit—in short, the best and most desired place in the world to live."

Mr. Sullivan's eloquence won, and the council took vigorous action to insure proper care of the trees in the future.



FOREST NOTES

The National Conservation Congress has decided to hold its sixth annual session at New Orleans, La., on November 10, 11, 12 and 13, and during this same period a meeting of the Board of Directors of the American Forestry Association will also be held at New Orleans.

Members of the Canadian Forestry Association will hold their sixteenth annual convention at Halifax, Nova Scotia, September 1 to 4. It will be the first forestry conservation convention ever held there, and the forest owners in that section of Canada are expected to attend in large numbers. An excellent program has been prepared. The American Forestry Association will be represented by a number of its members.

Massachusetts has secured a law beneficial to forestry in the act which was approved on June 29 and which provides for the appointment of a State forest commission of three men, including the State forester, and gives them power to spend \$10,000 the first year, and \$20,000 each succeeding year, in the purchase and reforesting of land throughout the State at a price not to exceed five dollars an acre. Land thus acquired shall be exempt from taxation, but the Commonwealth shall reimburse cities and towns in which these lands are situated for the taxes lost by reason of their acquisition by the State.

All hope that Louis S. Margolin, the forest examiner of the Forest Service, who disappeared in the Sierra National Forest in June, is alive, has been abandoned. It is now believed that he lost his life during a heavy thunderstorm which prevailed a short time after he left his headquarters, probably by drowning while attempting to cross a swollen stream. A search for his body has so far been unsuccessful. Examiner Margolin was one of the best known men in the Forest Service with a record of many years of first-class work.

The annual forestry conference in the White Mountains, at Gorham, N. H., on July 21, 22 and 23, brought together members of the Society for the Protection of New Hampshire Forests, the Association of Northeastern Foresters, members of various fire protective and timberland associations, and members of the American Forestry Association and of the National Conservation Congress. There were several conferences and meetings during the three-day gathering at which some highly instructive addresses were heard, and considerable impetus was given to the demand that the National Government acquire more land for national forests in New England. A feature of the occasion was a visit to the paper mills of the Berlin Mills Company at Berlin, N. H., and a trip into the forest on the Presidential range.

Two accredited delegates from the North Carolina Forestry Association attended the mid-summer meeting of the American Forestry Association at Chautauqua, N. Y. Both delegates are very prominent members of the Women's Clubs in the State. Mrs. T. W. Lingle, of Davidson, being Chairman of the Social Service Department of the State Federation, and Miss Elizabeth Schwarberg, of Southern Pines, is late Chairman of the Department of Library Extension and President of the Southern Pines Civic Club. The latter writes that they greatly enjoyed what they heard at the Forestry meetings. She says: "The importance of *doing* things in the interest of forestry was more and more impressed upon us. If North Carolina is to hold her own, she must maintain her forests; and, if people only knew more about the cause, more would be done to further it. After all, it is what we *do* that counts, and I am going to talk forestry and *do* what I can in our town to plant trees and prevent forest fires. The leaders in this line of work are a capable set of men and the cause is bound to succeed."

The Department of Commerce has announced the completion of plans by the secretaries of commerce and agriculture whereby these two departments will combine in a constructive study of the supply and exploitation of timber of the United States, which they declare has now become one of the big conservation and industrial problems. In the opinion of the secretaries one of the conditions which make this study of immediate importance to the public at large is the fact that the United States is now reducing its stock of stumpage, estimated at 3,000,000,000,000 feet, at the rate of more than 60,000,000,000 feet annually.

The *Biltmorean*, an attractive quarterly magazine devoted to news about graduates of the Biltmore Forest School, appeared during June and will doubtless serve as a tie to bind the friendships formed in school days and to keep the graduates informed of the

movements and the activities of their friends. Harrison H. Morse is the editor, Harry P. Howes the manager, and Dr. H. D. House the general representative. The magazine is published at Albany.

The Forest Service has issued to automobilists of Arizona and New Mexico a letter calling their attention to the fact that last year Arizona's share of the National forest revenues was \$140,749.94 and New Mexico's share was \$53,109.84, the fund being used for the maintenance of roads and schools. These receipts come from the sale of mature timber and the grazing of stock. Obviously as the automobilists benefit by the improvement in the roads, and as forest fires annually destroy stock range and both young and mature timber, it is of direct interest to the automobilists to see that the forests are protected against fires. As sixty per cent of these fires are attributed to carelessness, the automobilists can do much to guard against them.

The well-known firm of Conrad Appel, which deals at Darmstadt, Germany, in wholesale forest and agricultural seeds, celebrated the 125th anniversary of its establishment in June. Since the day the firm started it has always been in the hands of the same family, Mr. Ludwig Heyn, the present sole proprietor, being the great-grandson of Mr. Johann Conrad Appel, the founder of the house. The business was started in 1789 and has enjoyed a long and prosperous career, being at the present time known all over the world. The firm claims to have the largest coning establishments in the world.

The summer practice terms have begun at the Georgia forest school. One man is putting in his practice term at his father's sawmill. One is working at a sawmill in Cob County. Four are preparing a topographic map, estimate of stand, and working plan report for a tract in Habersham County. These men are camping in a cabin in the woods, and they report that they are

having the time of their lives in spite of a good deal of rough work. They are able to help out their supply department by fresh fish from the Catahoochee.

That at least one-twentieth of all the stock bred on the open range of the West dies before it reaches market age and that much of this loss can be stopped is shown by results reported from the national forests. This waste is said to add millions of dollars to the people's meat bill and gives one more cause of the high cost of living. Winter storms and summer droughts strew the ranges with the bones of cattle and sheep; predatory animals take a heavy toll; poisonous plants sometimes kill half the animals in a herd almost over night. Cattle contract anthrax, black-leg and other diseases, get stuck in bog holes, slip off icy hillsides; and sheep pile up and die of suffocation. Insects which madden and kill swell the total losses as do a multitude of other minor causes of death and injury.

The most notable progress yet recorded in the chemical treatment of timber to prevent decay was made in 1913, according to a report recently issued by the American Wood Preservers' Association in cooperation with the Forest Service of the Department of Agriculture. The report states that 93 wood-preserving plants in 1913 consumed over 108 million gallons of creosote oil, 26 million pounds of dry zinc chloride, and nearly 4 million gallons of other liquid preservatives. With these the plants treated over 153 million cubic feet of timber, or about 23 per cent more than in 1912. The output from additional plants unrecorded would increase the totals given. Impregnation of wood with oils and chemicals to increase its resistance to decay and insect attack, the report goes on to say, is an industry which has become important in the United States only in recent years. In Great Britain and most of the European countries practically every wooden cross-tie and telephone or telegraph pole receives preservative treatment. In the United States less than 30 per cent of the 135

million cross-ties annually consumed are treated, and the proper treatment of an annual consumption of 4 million poles may be said to have scarcely commenced.

Lands just approved by the National Forest Reservation Commission for purchase by the Government include 6,083 acres in West Virginia, of which one tract comprising 6,000 acres is situated in Tucker and Randolph counties in the Monongahela purchase area. The remaining 83 acres are on the Potomac watershed in Hardy County in the Potomac purchase area. These lands are to be acquired in accordance with the general policy under which national forests of good size are being built up in the Eastern mountains, both north and south through successive purchases. Tracts are bought within certain designated areas, of which West Virginia has three. The lands just approved by the commission bring the acreage of the Monongahela purchase area up to 42,887 acres and the acreage of that part of the Potomac area lying in West Virginia to 36,405 acres, while the total acreage in the State approved for purchase amounts to 105,480 acres.

The State legislature of 1913 designated the North Dakota State School of Forestry as a State nursery and provided that the president of the school should be the State Forester, and he should have general supervision of the raising and distributing of seeds and forest tree seedlings, promote practical forestry; compile and disseminate information relative thereto, and publish the results of such work by issuing and distributing bulletins, lecturing before farmers, institutes, associations, and other ways as would most practically reach the public.

A cooperative fire agreement which has been entered into between the United States Department of Agriculture and the State of Michigan provides for an expenditure by the Government of not to exceed \$5,000 a year, under provisions of the Weeks law, toward meeting the expenses of forest fire protection in Michigan.



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5-4

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2,609.852 acres. Also 2,594,690,000 feet of stumpage. Value Forty-Seven Million Dollars. For Sale in nine Southern States.

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